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<120> Novel Bt Toxin Receptors From
Lepidopteran Insects and Methods of Use

<130> 35718/204664

<150> 60/166,285

<151> 1999-11-18

<160> 11

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 5498

<212> DNA

<213> Ostrinia nubilalis

<220>

<221> CDS

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| cataataaca ataaagagga agtgtgtgtg aaaaacgaag aagttaataa acctggataa | 60 |
| ttaaaccctga aaaaaaccgg tgtttaagtg gaatttttgc tgaaggacaa ccgtgggata | 120 |
| gctcaaatat taaaattcta cataactaag gatcatgcaa a atg ggg gtt gag agg | 176 |
| Met Gly Val Glu Arg | |
| 1 5 | |

| | |
|-----------------------------------------------------------------|-----|
| ttc ttc cca gca gtg cta ctg gtc tct tta gcc tct gcc gca cta gcc | 224 |
| Phe Phe Pro Ala Val Leu Leu Val Ser Leu Ala Ser Ala Ala Leu Ala | |
| 10 15 20 | |

| | |
|-----------------------------------------------------------------|-----|
| aac caa cga tgt tcg tac att atc gca ata cca aga ccg gag act ccg | 272 |
| Asn Gln Arg Cys Ser Tyr Ile Ile Ala Ile Pro Arg Pro Glu Thr Pro | |
| 25 30 35 | |

| | |
|-----------------------------------------------------------------|-----|
| gaa ctg ccg cct att gat tac gaa gga aaa tca tgg agt gaa cag cct | 320 |
| Glu Leu Pro Pro Ile Asp Tyr Glu Gly Lys Ser Trp Ser Glu Gln Pro | |
| 40 45 50 | |

| | |
|-----------------------------------------------------------------|-----|
| cta ata ccc ggc ccg acc cga gag gaa gta tgt atg gag aac ttc tta | 368 |
| Leu Ile Pro Gly Pro Thr Arg Glu Glu Val Cys Met Glu Asn Phe Leu | |
| 55 60 65 | |

| | |
|-----------------------------------------------------------------|-----|
| ccg gat caa atg att cag gtc ata tac atg gag gaa gaa atc gaa gga | 416 |
| Pro Asp Gln Met Ile Gln Val Ile Tyr Met Glu Glu Glu Ile Glu Gly | |
| 70 75 80 85 | |

| | |
|-----------------------------------------------------------------|-----|
| gac gtc atc att gcg aag ctt aac tat caa ggg tcc aac acg ccg gtg | 464 |
| Asp Val Ile Ile Ala Lys Leu Asn Tyr Gln Gly Ser Asn Thr Pro Val | |
| 90 95 100 | |

| | |
|-----------------------------------------------------------------|-----|
| ctg tcg att atg tca ggc cag ccc aga gcc cag ctg ggc cct gag ttt | 512 |
|-----------------------------------------------------------------|-----|

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| Leu | Ser | Ile | Met | Ser | Gly | Gln | Pro | Arg | Ala | Gln | Leu | Gly | Pro | Glu | Phe | | |
| | | | 105 | | | | | 110 | | | | | 115 | | | | |
| cga | cag | aat | gaa | gca | gac | ggc | caa | tgg | agc | ctt | gtt | att | acg | caa | aga | | 560 |
| Arg | Gln | Asn | Glu | Ala | Asp | Gly | Gln | Trp | Ser | Leu | Val | Ile | Thr | Gln | Arg | | |
| | | 120 | | | | | 125 | | | | | 130 | | | | | |
| caa | gac | tac | gag | aca | gca | acc | atg | cag | agc | tat | gtg | ttc | tca | atc | caa | | 608 |
| Gln | Asp | Tyr | Glu | Thr | Ala | Thr | Met | Gln | Ser | Tyr | Val | Phe | Ser | Ile | Gln | | |
| | 135 | | | | | 140 | | | | | 145 | | | | | | |
| gtg | gag | ggt | gaa | tca | cag | gcc | gta | ctg | gtg | gcg | ctg | gag | ata | gtc | aac | | 656 |
| Val | Glu | Gly | Glu | Ser | Gln | Ala | Val | Leu | Val | Ala | Leu | Glu | Ile | Val | Asn | | |
| 150 | | | | | 155 | | | | | 160 | | | | | 165 | | |
| atc | gac | gac | aat | ccg | ccc | atc | ctg | caa | gtg | gtc | agc | gcc | tgc | gta | att | | 704 |
| Ile | Asp | Asp | Asn | Pro | Pro | Ile | Leu | Gln | Val | Val | Ser | Ala | Cys | Val | Ile | | |
| | | | | 170 | | | | | 175 | | | | | 180 | | | |
| cca | gaa | cat | ggc | gag | gct | aga | ctg | acc | gac | tgc | gtg | tac | caa | gtg | tca | | 752 |
| Pro | Glu | His | Gly | Glu | Ala | Arg | Leu | Thr | Asp | Cys | Val | Tyr | Gln | Val | Ser | | |
| | | | 185 | | | | | 190 | | | | | 195 | | | | |
| gac | cgc | gac | ggt | gaa | atc | agc | acc | cgc | ttc | atg | acg | ttc | cgt | gtc | gac | | 800 |
| Asp | Arg | Asp | Gly | Glu | Ile | Ser | Thr | Arg | Phe | Met | Thr | Phe | Arg | Val | Asp | | |
| | | 200 | | | | | 205 | | | | | 210 | | | | | |
| agc | agc | agg | gct | gca | gat | gaa | agc | atc | ttc | tac | atg | gtt | gga | gaa | tac | | 848 |
| Ser | Ser | Arg | Ala | Ala | Asp | Glu | Ser | Ile | Phe | Tyr | Met | Val | Gly | Glu | Tyr | | |
| | 215 | | | | | 220 | | | | | 225 | | | | | | |
| gac | ccc | agc | gac | tgg | ttc | aat | atg | aag | atg | act | gtg | ggg | atc | aat | tcg | | 896 |
| Asp | Pro | Ser | Asp | Trp | Phe | Asn | Met | Lys | Met | Thr | Val | Gly | Ile | Asn | Ser | | |
| 230 | | | | | 235 | | | | | 240 | | | | | 245 | | |
| ccc | ttg | aac | ttc | gag | aca | act | cag | ctt | cat | ata | ttt | agc | gtc | aca | gct | | 944 |
| Pro | Leu | Asn | Phe | Glu | Thr | Thr | Gln | Leu | His | Ile | Phe | Ser | Val | Thr | Ala | | |
| | | | 250 | | | | | 255 | | | | | | 260 | | | |
| tct | gac | tcg | cta | ccg | aac | aac | cac | acg | gtc | acc | atg | atg | gtg | caa | gtg | | 992 |
| Ser | Asp | Ser | Leu | Pro | Asn | Asn | His | Thr | Val | Thr | Met | Met | Val | Gln | Val | | |
| | | | 265 | | | | | 270 | | | | | 275 | | | | |
| gag | aac | gta | gag | tct | cgg | ccc | cct | cgc | tgg | gtg | gag | atc | ttc | tca | gtg | | 1040 |
| Glu | Asn | Val | Glu | Ser | Arg | Pro | Pro | Arg | Trp | Val | Glu | Ile | Phe | Ser | Val | | |
| | | 280 | | | | | 285 | | | | | 290 | | | | | |
| cag | cag | ttt | gac | gag | aag | act | aat | cag | agc | ttc | tcc | ctc | cgc | gcg | ata | | 1088 |
| Gln | Gln | Phe | Asp | Glu | Lys | Thr | Asn | Gln | Ser | Phe | Ser | Leu | Arg | Ala | Ile | | |
| | | 295 | | | | 300 | | | | | 305 | | | | | | |
| gac | ggg | gac | acg | gga | atc | aat | agg | gcc | atc | aac | tat | acc | ctc | atc | agg | | 1136 |
| Asp | Gly | Asp | Thr | Gly | Ile | Asn | Arg | Ala | Ile | Asn | Tyr | Thr | Leu | Ile | Arg | | |
| 310 | | | | | 315 | | | | | 320 | | | | | 325 | | |
| gat | gac | gct | gac | gac | ttc | ttt | tcc | ctg | gag | gtg | att | gaa | gac | gga | gct | | 1184 |
| Asp | Asp | Ala | Asp | Asp | Phe | Phe | Ser | Leu | Glu | Val | Ile | Glu | Asp | Gly | Ala | | |
| | | | | 330 | | | | | 335 | | | | | 340 | | | |
| att | ctg | cac | gtg | act | gag | atc | gac | cgc | gac | aag | ctt | gaa | aga | gag | ctt | | 1232 |
| Ile | Leu | His | Val | Thr | Glu | Ile | Asp | Arg | Asp | Lys | Leu | Glu | Arg | Glu | Leu | | |
| | | | 345 | | | | | 350 | | | | | 355 | | | | |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| ttc aac ctc acc atc gtt gct tac aaa tct act gac gct agc ttt gca Phe Asn Leu Thr Ile Val Ala Tyr Lys Ser Thr Asp Ala Ser Phe Ala 360 365 370 | 1280 |
| aca gag gcc cac att ttc atc atc gtc aac gac gtc aat gat cag cga Thr Glu Ala His Ile Phe Ile Ile Val Asn Asp Val Asn Asp Gln Arg 375 380 385 | 1328 |
| ccc gag ccg ctg cat aaa gaa tac agt att gat atc atg gag gaa act Pro Glu Pro Leu His Lys Glu Tyr Ser Ile Asp Ile Met Glu Glu Thr 390 395 400 405 | 1376 |
| cca atg act cta aac ttc aat gaa gaa ttt gga ttc cat gat cga gat Pro Met Thr Leu Asn Phe Asn Glu Glu Phe Gly Phe His Asp Arg Asp 410 415 420 | 1424 |
| ttg ggt gaa aac gct caa tac aca gtg gaa ctt gag gac gtg ttc ccg Leu Gly Glu Asn Ala Gln Tyr Thr Val Glu Leu Glu Asp Val Phe Pro 425 430 435 | 1472 |
| cca ggg gcg gcg tcc gca ttc tac atc gcg ccg ggg agc ggc tac cag Pro Gly Ala Ala Ser Ala Phe Tyr Ile Ala Pro Gly Ser Gly Tyr Gln 440 445 450 | 1520 |
| agg cag acc ttc atc atg ggc acc ata aac cac acc atg ctg gat tac Arg Gln Thr Phe Ile Met Gly Thr Ile Asn His Thr Met Leu Asp Tyr 455 460 465 | 1568 |
| gaa gat gtc att ttt cag aac atc atc att aag gtc aaa gca gtg gac Glu Asp Val Ile Phe Gln Asn Ile Ile Ile Lys Val Lys Ala Val Asp 470 475 480 485 | 1616 |
| atg aac aac gct agc cac gtg ggc gag gcg ctg gtg tac gtg aac ctg Met Asn Asn Ala Ser His Val Gly Glu Ala Leu Val Tyr Val Asn Leu 490 495 500 | 1664 |
| atc aac tgg aac gac gaa ctt ccc atc ttc gag gag agc agc tac tcc Ile Asn Trp Asn Asp Glu Leu Pro Ile Phe Glu Glu Ser Ser Tyr Ser 505 510 515 | 1712 |
| gcg tcg ttt aag gag acc gtc ggc gcc ggc ttc ccg gtg gcc acg gtg Ala Ser Phe Lys Glu Thr Val Gly Ala Gly Phe Pro Val Ala Thr Val 520 525 530 | 1760 |
| ctc gcc ctc gac aga gac atc gac gac gta gta gtg cat tca ttg atg Leu Ala Leu Asp Arg Asp Ile Asp Asp Val Val Val His Ser Leu Met 535 540 545 | 1808 |
| ggc aac gct gtt gac tac ctg ttc ata gat gaa tca acg gga gag atc Gly Asn Ala Val Asp Tyr Leu Phe Ile Asp Glu Ser Thr Gly Glu Ile 550 555 560 565 | 1856 |
| ttc gtg agc atg gac gat gcc ttc gac tac cac cga cag aac act cta Phe Val Ser Met Asp Asp Ala Phe Asp Tyr His Arg Gln Asn Thr Leu 570 575 580 | 1904 |
| ttt gtt cag gtg cgc gct gac gat act ttg ggc gac ggc cca cac aac Phe Val Gln Val Arg Ala Asp Asp Thr Leu Gly Asp Gly Pro His Asn 585 590 595 | 1952 |
| aca gtg acc acc cag ctg gtg ata gaa ctg gag gat gtc aac aac act | 2000 |

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|-----------------------------------------------------------------|------|
| Thr Val Thr Thr Gln Leu Val Ile Glu Leu Glu Asp Val Asn Asn Thr | |
| 600 605 610 | |
| cct ccc acc cta cgc ttg ccc cgt tcg act cca agc gtc gag gag aac | 2048 |
| Pro Pro Thr Leu Arg Leu Pro Arg Ser Thr Pro Ser Val Glu Glu Asn | |
| 615 620 625 | |
| ggt ccc gaa gga tac gag ata tcc cgg gaa atc act gct acc gac ccg | 2096 |
| Val Pro Glu Gly Tyr Glu Ile Ser Arg Glu Ile Thr Ala Thr Asp Pro | |
| 630 635 640 645 | |
| gac acc agc gcc tac ctg tgg ttc gag atc gac tgg gac tcc acc tgg | 2144 |
| Asp Thr Ser Ala Tyr Leu Trp Phe Glu Ile Asp Trp Asp Ser Thr Trp | |
| 650 655 660 | |
| gcc acc aag cag ggc aga gag acc aac cct act gaa tac gtc ggg tgt | 2192 |
| Ala Thr Lys Gln Gly Arg Glu Thr Asn Pro Thr Glu Tyr Val Gly Cys | |
| 665 670 675 | |
| ata gtt atc gaa acg ata tac ccc acc gag ggc aac cgg ggt tcc gcc | 2240 |
| Ile Val Ile Glu Thr Ile Tyr Pro Thr Glu Gly Asn Arg Gly Ser Ala | |
| 680 685 690 | |
| atc ggg cgc ctc gtg gtg caa gag atc cgg gac aac gtc acc atc gac | 2288 |
| Ile Gly Arg Leu Val Val Gln Glu Ile Arg Asp Asn Val Thr Ile Asp | |
| 695 700 705 | |
| ttc gag gaa ttc gag atg ctt tac ctc acc gtc cgc gtg agg gac ctc | 2336 |
| Phe Glu Glu Phe Glu Met Leu Tyr Leu Thr Val Arg Val Arg Asp Leu | |
| 710 715 720 725 | |
| aac act gtc atc gga gat gac tac gat gag gcg acg ttc acg atc aca | 2384 |
| Asn Thr Val Ile Gly Asp Asp Tyr Asp Glu Ala Thr Phe Thr Ile Thr | |
| 730 735 740 | |
| ata atc gac atg aac gac aac gcg ccg atc ttc gcg aac ggc acg ctg | 2432 |
| Ile Ile Asp Met Asn Asp Asn Ala Pro Ile Phe Ala Asn Gly Thr Leu | |
| 745 750 755 | |
| acg cag acg atg cgc gtg cgc gag ctg gcg gcc agc ggc acg ctc atc | 2480 |
| Thr Gln Thr Met Arg Val Arg Glu Leu Ala Ala Ser Gly Thr Leu Ile | |
| 760 765 770 | |
| ggc tcc gtg ctc gcc acc gac atc gac ggc ccg ctc tac aac caa gtg | 2528 |
| Gly Ser Val Leu Ala Thr Asp Ile Asp Gly Pro Leu Tyr Asn Gln Val | |
| 775 780 785 | |
| cgc tac act ata caa cct aga aac aac act ccc gag gga tta gtg aag | 2576 |
| Arg Tyr Thr Ile Gln Pro Arg Asn Asn Thr Pro Glu Gly Leu Val Lys | |
| 790 795 800 805 | |
| att gac ttc aca act ggt caa att gag gtg gat gcg aac gag gcg atc | 2624 |
| Ile Asp Phe Thr Thr Gly Gln Ile Glu Val Asp Ala Asn Glu Ala Ile | |
| 810 815 820 | |
| gat gca gac gaa ccc tgg cgc ttc tac ttg tac tac acc gtc atc gct | 2672 |
| Asp Ala Asp Glu Pro Trp Arg Phe Tyr Leu Tyr Tyr Thr Val Ile Ala | |
| 825 830 835 | |
| agc gac gag tgc tcc ctg gaa aac cgc acg gaa tgt cct cca gat tcc | 2720 |
| Ser Asp Glu Cys Ser Leu Glu Asn Arg Thr Glu Cys Pro Pro Asp Ser | |
| 840 845 850 | |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| aac tac ttc gaa gtt cca ggc gat atc gaa ata gaa atc atc gac aca Asn Tyr Phe Glu Val Pro Gly Asp Ile Glu Ile Glu Ile Ile Asp Thr 855 860 865 | 2768 |
| aac aac aaa gtg cct gag ccg ctc act gag aag ttc aac acg acg gtg Asn Asn Lys Val Pro Glu Pro Leu Thr Glu Lys Phe Asn Thr Thr Val 870 875 880 885 | 2816 |
| tac gtc tgg gag aat gcc acg agc ggc gac gag gtg gtc cag ctg tac Tyr Val Trp Glu Asn Ala Thr Ser Gly Asp Glu Val Val Gln Leu Tyr 890 895 900 | 2864 |
| tcc cac gac cgt gac aga gac gag ttg tac cac acg gta cga tac acg Ser His Asp Arg Asp Arg Asp Glu Leu Tyr His Thr Val Arg Tyr Thr 905 910 915 | 2912 |
| atg aac ttt gcg gtg aac ccc cga ctg cgg gat ttc ttc gag gtg gac Met Asn Phe Ala Val Asn Pro Arg Leu Arg Asp Phe Phe Glu Val Asp 920 925 930 | 2960 |
| ctg gac act ggt cgc ctt gag gtg cat tac ccg ggg gac gaa aaa ttg Leu Asp Thr Gly Arg Leu Glu Val His Tyr Pro Gly Asp Glu Lys Leu 935 940 945 | 3008 |
| gac cgc gat ggg gat gag cct aca cat act atc ttt gta aat ttc atc Asp Arg Asp Gly Asp Glu Pro Thr His Thr Ile Phe Val Asn Phe Ile 950 955 960 965 | 3056 |
| gat aac ttc ttt tct gat ggt gac ggt agg aga aac cag gac gaa gtt Asp Asn Phe Phe Ser Asp Gly Asp Gly Arg Arg Asn Gln Asp Glu Val 970 975 980 | 3104 |
| gaa ata ttt gtc gtt cta ttg gat gtg aac gac aac gct cct gag atg Glu Ile Phe Val Val Leu Leu Asp Val Asn Asp Asn Ala Pro Glu Met 985 990 995 | 3152 |
| cca ttg cct gat gaa ctc ccg ttt gat gtt tcc gaa gga gca gtt gct Pro Leu Pro Asp Glu Leu Arg Phe Asp Val Ser Glu Gly Ala Val Ala 1000 1005 1010 | 3200 |
| ggt gtc cgt gta ctc cca gaa atc tac gca ccg gac agg gat gaa cca Gly Val Arg Val Leu Pro Glu Ile Tyr Ala Pro Asp Arg Asp Glu Pro 1015 1020 1025 | 3248 |
| gac acg gac aac tcg cgt gtc ggt tac gga atc ctg gac ctc acg atc Asp Thr Asp Asn Ser Arg Val Gly Tyr Gly Ile Leu Asp Leu Thr Ile 1030 1035 1040 1045 | 3296 |
| acc gac cga gac atc gag gtg ccg gat ctc ttc acc atg atc tcg att Thr Asp Arg Asp Ile Glu Val Pro Asp Leu Phe Thr Met Ile Ser Ile 1050 1055 1060 | 3344 |
| gaa aac aaa act ggg gaa ctt gag acc gct atg gac ttg agg ggg tat Glu Asn Lys Thr Gly Glu Leu Glu Thr Ala Met Asp Leu Arg Gly Tyr 1065 1070 1075 | 3392 |
| tgg ggc act tac gaa ata ttc att gag gcc ttc gac cac ggc tac ccg Trp Gly Thr Tyr Glu Ile Phe Ile Glu Ala Phe Asp His Gly Tyr Pro 1080 1085 1090 | 3440 |
| cag cag agg tcc aac gag acg tac acc ctg gtc atc cgc ccc tac aac | 3488 |

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|--------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|
| Gln Gln Arg Ser Asn Glu Thr Tyr Thr Leu Val Ile Arg Pro Tyr Asn 1095 | 1100 | 1105 | |
| ttc cac cac cct gtg ttc gtg ttc ccg caa ccc gac tcc gtc att cgg Phe His His Pro Val Phe Val Phe Pro Gln Pro Asp Ser Val Ile Arg 1110 | 1115 | 1120 | 3536 |
| ctt tct agg gag cgc gca aca gaa ggc ggc gtt ctg gcg acg gct gcc Leu Ser Arg Glu Arg Ala Thr Glu Gly Gly Val Leu Ala Thr Ala Ala 1130 | 1135 | 1140 | 3584 |
| aac gag ttc ctg gag ccg atc tac gcc acc gac gag gac ggc ctc cac Asn Glu Phe Leu Glu Pro Ile Tyr Ala Thr Asp Glu Asp Gly Leu His 1145 | 1150 | 1155 | 3632 |
| gcg ggc agc gtc acg ttc cac gtc cag gga aat gag gag gcc gtt cag Ala Gly Ser Val Thr Phe His Val Gln Gly Asn Glu Glu Ala Val Gln 1160 | 1165 | 1170 | 3680 |
| tac ttt gat ata act gaa gtg gga gca gga gaa aat agc ggg cag ctt Tyr Phe Asp Ile Thr Glu Val Gly Ala Gly Glu Asn Ser Gly Gln Leu 1175 | 1180 | 1185 | 3728 |
| ata tta cgc cag ctt ttc cca gag caa atc aga caa ttc agg atc acg Ile Leu Arg Gln Leu Phe Pro Glu Gln Ile Arg Gln Phe Arg Ile Thr 1190 | 1195 | 1200 | 3776 |
| atc cgg gcc acg gac ggc ggc acg gag ccc ggc ccg ctt tgg acc gac Ile Arg Ala Thr Asp Gly Gly Thr Glu Pro Gly Pro Leu Trp Thr Asp 1210 | 1215 | 1220 | 3824 |
| gtc acg ttt tcg gtg gtc ttc gta ccc aca cag ggc gac cca gtg ttc Val Thr Phe Ser Val Val Phe Val Pro Thr Gln Gly Asp Pro Val Phe 1225 | 1230 | 1235 | 3872 |
| agc gaa aat gca gct act gtc gcc ttc ttc gag ggt gaa gaa ggc ctc Ser Glu Asn Ala Ala Thr Val Ala Phe Phe Glu Gly Glu Glu Gly Leu 1240 | 1245 | 1250 | 3920 |
| cgt gag agt ttt gag ctg ccg caa gca gaa gac ctt aaa aac cac ctc Arg Glu Ser Phe Glu Leu Pro Gln Ala Glu Asp Leu Lys Asn His Leu 1255 | 1260 | 1265 | 3968 |
| tgc gaa gat gac tgc caa gat atc tac tac agg ttt att gac ggc aac Cys Glu Asp Asp Cys Gln Asp Ile Tyr Tyr Arg Phe Ile Asp Gly Asn 1270 | 1275 | 1280 | 4016 |
| aac gag ggt ctt ttc gta ctg gac cag tca agc aac gtc atc tcc ctt Asn Glu Gly Leu Phe Val Leu Asp Gln Ser Ser Asn Val Ile Ser Leu 1290 | 1295 | 1300 | 4064 |
| gcg cag gag ttg gac cgc gag gtg gcc acg tct tac acg ctg cac atc Ala Gln Glu Leu Asp Arg Glu Val Ala Thr Ser Tyr Thr Leu His Ile 1305 | 1310 | 1315 | 4112 |
| gcg gcg agc aac tcg ccc gac gcc act ggg atc cct ctg cag act tcc Ala Ala Ser Asn Ser Pro Asp Ala Thr Gly Ile Pro Leu Gln Thr Ser 1320 | 1325 | 1330 | 4160 |
| atc ctc gtt gtc acg gtc aat gta aga gaa gcg aac ccg cgc cca att Ile Leu Val Val Thr Val Asn Val Arg Glu Ala Asn Pro Arg Pro Ile 1335 | 1340 | 1345 | 4208 |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| ttc gag cag gac ctt tac aca gcg ggc att tcg acg ttg gac agc att Phe Glu Gln Asp Leu Tyr Thr Ala Gly Ile Ser Thr Leu Asp Ser Ile 1350 1355 1360 1365 | 4256 |
| ggc cgg gaa ttg ctt act gtc agg gcg agc cac aca gaa gac gac acc Gly Arg Glu Leu Leu Thr Val Arg Ala Ser His Thr Glu Asp Asp Thr 1370 1375 1380 | 4304 |
| atc acg tac acc ata gac cgt gcg agc atg cag ctg gac agc agc cta Ile Thr Tyr Thr Ile Asp Arg Ala Ser Met Gln Leu Asp Ser Ser Leu 1385 1390 1395 | 4352 |
| gaa gcc gtg cgc gac tcg gcc ttc gcg ctg cat gcg acc acc ggc gtg Glu Ala Val Arg Asp Ser Ala Phe Ala Leu His Ala Thr Thr Gly Val 1400 1405 1410 | 4400 |
| ctt tcg ctc aat atg cag ccc acc gct tcc atg cac ggc atg ttc gag Leu Ser Leu Asn Met Gln Pro Thr Ala Ser Met His Gly Met Phe Glu 1415 1420 1425 | 4448 |
| ttc gac gtc atc gct acg gat aca gct tct gca atc gac aca gcc cgt Phe Asp Val Ile Ala Thr Asp Thr Ala Ser Ala Ile Asp Thr Ala Arg 1430 1435 1440 1445 | 4496 |
| gtg aaa gtc tac ctc atc tca tcg caa aac cgc gtg acc ttc att ttc Val Lys Val Tyr Leu Ile Ser Ser Gln Asn Arg Val Thr Phe Ile Phe 1450 1455 1460 | 4544 |
| gat aac caa ctt gag acc gtt gag cag aac aga aat ttc ata gcg gcc Asp Asn Gln Leu Glu Thr Val Glu Gln Asn Arg Asn Phe Ile Ala Ala 1465 1470 1475 | 4592 |
| acg ttc agc acc ggg ttc aac atg acg tgc aac atc gac cag gtg gtg Thr Phe Ser Thr Gly Phe Asn Met Thr Cys Asn Ile Asp Gln Val Val 1480 1485 1490 | 4640 |
| ccg ttc agc gac agc agc ggc gtg gcg caa gac gac acc acc gag gtg Pro Phe Ser Asp Ser Ser Gly Val Ala Gln Asp Asp Thr Thr Glu Val 1495 1500 1505 | 4688 |
| cgc gcg cac ttc atc cgg gac aac gtg ccc gtg cag gca caa gag gtc Arg Ala His Phe Ile Arg Asp Asn Val Pro Val Gln Ala Gln Glu Val 1510 1515 1520 1525 | 4736 |
| gag gcc gtc cgc agc gac acg gtg ctg ctg cgc acc atc cag ctg atg Glu Ala Val Arg Ser Asp Thr Val Leu Leu Arg Thr Ile Gln Leu Met 1530 1535 1540 | 4784 |
| ctg agc acc aac agc ctg gtg ctg caa gac ctg gtg acg ggt gac act Leu Ser Thr Asn Ser Leu Val Leu Gln Asp Leu Val Thr Gly Asp Thr 1545 1550 1555 | 4832 |
| ccg acg cta ggc gag gag tca atg cag atc gcc gtc tac gca cta gcc Pro Thr Leu Gly Glu Glu Ser Met Gln Ile Ala Val Tyr Ala Leu Ala 1560 1565 1570 | 4880 |
| gcg ctc tcc gct gtg cta ggc ttc ctc tgc ctc gta ctg ctt ctc gca Ala Leu Ser Ala Val Leu Gly Phe Leu Cys Leu Val Leu Leu Leu Ala 1575 1580 1585 | 4928 |
| ttg ttc tgt agg aca aga gca ctg aac cgg cag ctg caa gca ctc tcc | 4976 |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Glu | Ile | Val | Asn | Ile | Asp | Asp | Asn | Pro | Pro | Ile | Leu | Gln | Val | Val | 165 | 170 | 175 |
| Ser | Ala | Cys | Val | Ile | Pro | Glu | His | Gly | Glu | Ala | Arg | Leu | Thr | Asp | Cys | 180 | 185 | 190 |
| Val | Tyr | Gln | Val | Ser | Asp | Arg | Asp | Gly | Glu | Ile | Ser | Thr | Arg | Phe | Met | 195 | 200 | 205 |
| Thr | Phe | Arg | Val | Asp | Ser | Ser | Arg | Ala | Ala | Asp | Glu | Ser | Ile | Phe | Tyr | 210 | 215 | 220 |
| Met | Val | Gly | Glu | Tyr | Asp | Pro | Ser | Asp | Trp | Phe | Asn | Met | Lys | Met | Thr | 225 | 230 | 235 |
| Val | Gly | Ile | Asn | Ser | Pro | Leu | Asn | Phe | Glu | Thr | Thr | Gln | Leu | His | Ile | 245 | 250 | 255 |
| Phe | Ser | Val | Thr | Ala | Ser | Asp | Ser | Leu | Pro | Asn | Asn | His | Thr | Val | Thr | 260 | 265 | 270 |
| Met | Met | Val | Gln | Val | Glu | Asn | Val | Glu | Ser | Arg | Pro | Pro | Arg | Trp | Val | 275 | 280 | 285 |
| Glu | Ile | Phe | Ser | Val | Gln | Gln | Phe | Asp | Glu | Lys | Thr | Asn | Gln | Ser | Phe | 290 | 295 | 300 |
| Ser | Leu | Arg | Ala | Ile | Asp | Gly | Asp | Thr | Gly | Ile | Asn | Arg | Ala | Ile | Asn | 305 | 310 | 315 |
| Tyr | Thr | Leu | Ile | Arg | Asp | Asp | Ala | Asp | Asp | Phe | Phe | Ser | Leu | Glu | Val | 325 | 330 | 335 |
| Ile | Glu | Asp | Gly | Ala | Ile | Leu | His | Val | Thr | Glu | Ile | Asp | Arg | Asp | Lys | 340 | 345 | 350 |
| Leu | Glu | Arg | Glu | Leu | Phe | Asn | Leu | Thr | Ile | Val | Ala | Tyr | Lys | Ser | Thr | 355 | 360 | 365 |
| Asp | Ala | Ser | Phe | Ala | Thr | Glu | Ala | His | Ile | Phe | Ile | Ile | Val | Asn | Asp | 370 | 375 | 380 |
| Val | Asn | Asp | Gln | Arg | Pro | Glu | Pro | Leu | His | Lys | Glu | Tyr | Ser | Ile | Asp | 385 | 390 | 395 |
| Ile | Met | Glu | Glu | Thr | Pro | Met | Thr | Leu | Asn | Phe | Asn | Glu | Glu | Phe | Gly | 405 | 410 | 415 |
| Phe | His | Asp | Arg | Asp | Leu | Gly | Glu | Asn | Ala | Gln | Tyr | Thr | Val | Glu | Leu | 420 | 425 | 430 |
| Glu | Asp | Val | Phe | Pro | Pro | Gly | Ala | Ala | Ser | Ala | Phe | Tyr | Ile | Ala | Pro | 435 | 440 | 445 |
| Gly | Ser | Gly | Tyr | Gln | Arg | Gln | Thr | Phe | Ile | Met | Gly | Thr | Ile | Asn | His | 450 | 455 | 460 |
| Thr | Met | Leu | Asp | Tyr | Glu | Asp | Val | Ile | Phe | Gln | Asn | Ile | Ile | Ile | Lys | 465 | 470 | 475 |
| Val | Lys | Ala | Val | Asp | Met | Asn | Asn | Ala | Ser | His | Val | Gly | Glu | Ala | Leu | 485 | 490 | 495 |
| Val | Tyr | Val | Asn | Leu | Ile | Asn | Trp | Asn | Asp | Glu | Leu | Pro | Ile | Phe | Glu | 500 | 505 | 510 |
| Glu | Ser | Ser | Tyr | Ser | Ala | Ser | Phe | Lys | Glu | Thr | Val | Gly | Ala | Gly | Phe | 515 | 520 | 525 |
| Pro | Val | Ala | Thr | Val | Leu | Ala | Leu | Asp | Arg | Asp | Ile | Asp | Asp | Val | Val | 530 | 535 | 540 |
| Val | His | Ser | Leu | Met | Gly | Asn | Ala | Val | Asp | Tyr | Leu | Phe | Ile | Asp | Glu | 545 | 550 | 555 |
| Ser | Thr | Gly | Glu | Ile | Phe | Val | Ser | Met | Asp | Asp | Ala | Phe | Asp | Tyr | His | 565 | 570 | 575 |
| Arg | Gln | Asn | Thr | Leu | Phe | Val | Gln | Val | Arg | Ala | Asp | Asp | Thr | Leu | Gly | 580 | 585 | 590 |
| Asp | Gly | Pro | His | Asn | Thr | Val | Thr | Thr | Gln | Leu | Val | Ile | Glu | Leu | Glu | 595 | 600 | 605 |
| Asp | Val | Asn | Asn | Thr | Pro | Pro | Thr | Leu | Arg | Leu | Pro | Arg | Ser | Thr | Pro | 610 | 615 | 620 |
| Ser | Val | Glu | Glu | Asn | Val | Pro | Glu | Gly | Tyr | Glu | Ile | Ser | Arg | Glu | Ile | 625 | 630 | 635 |
| Thr | Ala | Thr | Asp | Pro | Asp | Thr | Ser | Ala | Tyr | Leu | Trp | Phe | Glu | Ile | Asp | 645 | 650 | 655 |

| | | | | | | | | | | | | | | | | | |
|------|-----|------|------|-----|------|------|------|------|-----|------|------|------|------|------|------|--|--|
| Trp | Asp | Ser | Thr | Trp | Ala | Thr | Lys | Gln | Gly | Arg | Glu | Thr | Asn | Pro | Thr | | |
| | | | 660 | | | | | 665 | | | | | 670 | | | | |
| Glu | Tyr | Val | Gly | Cys | Ile | Val | Ile | Glu | Thr | Ile | Tyr | Pro | Thr | Glu | Gly | | |
| | | 675 | | | | | 680 | | | | | 685 | | | | | |
| Asn | Arg | Gly | Ser | Ala | Ile | Gly | Arg | Leu | Val | Val | Gln | Glu | Ile | Arg | Asp | | |
| | | 690 | | | | | 695 | | | | 700 | | | | | | |
| Asn | Val | Thr | Ile | Asp | Phe | Glu | Glu | Phe | Glu | Met | Leu | Tyr | Leu | Thr | Val | | |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 | | |
| Arg | Val | Arg | Asp | Leu | Asn | Thr | Val | Ile | Gly | Asp | Asp | Tyr | Asp | Glu | Ala | | |
| | | | 725 | | | | | | 730 | | | | | 735 | | | |
| Thr | Phe | Thr | Ile | Thr | Ile | Ile | Asp | Met | Asn | Asp | Asn | Ala | Pro | Ile | Phe | | |
| | | | 740 | | | | | 745 | | | | | 750 | | | | |
| Ala | Asn | Gly | Thr | Leu | Thr | Gln | Thr | Met | Arg | Val | Arg | Glu | Leu | Ala | Ala | | |
| | | 755 | | | | | 760 | | | | | 765 | | | | | |
| Ser | Gly | Thr | Leu | Ile | Gly | Ser | Val | Leu | Ala | Thr | Asp | Ile | Asp | Gly | Pro | | |
| | | 770 | | | | | 775 | | | | 780 | | | | | | |
| Leu | Tyr | Asn | Gln | Val | Arg | Tyr | Thr | Ile | Gln | Pro | Arg | Asn | Asn | Thr | Pro | | |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 | | |
| Glu | Gly | Leu | Val | Lys | Ile | Asp | Phe | Thr | Thr | Gly | Gln | Ile | Glu | Val | Asp | | |
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| Ala | Asn | Glu | Ala | Ile | Asp | Ala | Asp | Glu | Pro | Trp | Arg | Phe | Tyr | Leu | Tyr | | |
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| Tyr | Thr | Val | Ile | Ala | Ser | Asp | Glu | Cys | Ser | Leu | Glu | Asn | Arg | Thr | Glu | | |
| | | 835 | | | | | 840 | | | | | 845 | | | | | |
| Cys | Pro | Pro | Asp | Ser | Asn | Tyr | Phe | Glu | Val | Pro | Gly | Asp | Ile | Glu | Ile | | |
| | | 850 | | | | 855 | | | | | 860 | | | | | | |
| Glu | Ile | Ile | Asp | Thr | Asn | Asn | Lys | Val | Pro | Glu | Pro | Leu | Thr | Glu | Lys | | |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 | | |
| Phe | Asn | Thr | Thr | Val | Tyr | Val | Trp | Glu | Asn | Ala | Thr | Ser | Gly | Asp | Glu | | |
| | | | 885 | | | | | 890 | | | | | | 895 | | | |
| Val | Val | Gln | Leu | Tyr | Ser | His | Asp | Arg | Asp | Arg | Asp | Glu | Leu | Tyr | His | | |
| | | | 900 | | | | | 905 | | | | | 910 | | | | |
| Thr | Val | Arg | Tyr | Thr | Met | Asn | Phe | Ala | Val | Asn | Pro | Arg | Leu | Arg | Asp | | |
| | | 915 | | | | | 920 | | | | | 925 | | | | | |
| Phe | Phe | Glu | Val | Asp | Leu | Asp | Thr | Gly | Arg | Leu | Glu | Val | His | Tyr | Pro | | |
| | | 930 | | | | 935 | | | | | 940 | | | | | | |
| Gly | Asp | Glu | Lys | Leu | Asp | Arg | Asp | Gly | Asp | Glu | Pro | Thr | His | Thr | Ile | | |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 | | |
| Phe | Val | Asn | Phe | Ile | Asp | Asn | Phe | Phe | Ser | Asp | Gly | Asp | Gly | Arg | Arg | | |
| | | | 965 | | | | | 970 | | | | | | 975 | | | |
| Asn | Gln | Asp | Glu | Val | Glu | Ile | Phe | Val | Val | Leu | Leu | Asp | Val | Asn | Asp | | |
| | | | 980 | | | | | 985 | | | | | 990 | | | | |
| Asn | Ala | Pro | Glu | Met | Pro | Leu | Pro | Asp | Glu | Leu | Arg | Phe | Asp | Val | Ser | | |
| | | 995 | | | | | 1000 | | | | | 1005 | | | | | |
| Glu | Gly | Ala | Val | Ala | Gly | Val | Arg | Val | Leu | Pro | Glu | Ile | Tyr | Ala | Pro | | |
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| Leu | Asp | Leu | Thr | Ile | Thr | Asp | Arg | Asp | Ile | Glu | Val | Pro | Asp | Leu | Phe | | |
| | | | 1045 | | | | | 1050 | | | | | | 1055 | | | |
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| | | 1075 | | | | | 1080 | | | | | 1085 | | | | | |
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| | | 1090 | | | | 1095 | | | | | 1100 | | | | | | |
| Ile | Arg | Pro | Tyr | Asn | Phe | His | His | Pro | Val | Phe | Val | Phe | Pro | Gln | Pro | | |
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| Asp | Ser | Val | Ile | Arg | Leu | Ser | Arg | Glu | Arg | Ala | Thr | Glu | Gly | Gly | Val | | |
| | | | 1125 | | | | | 1130 | | | | | | 1135 | | | |
| Leu | Ala | Thr | Ala | Ala | Asn | Glu | Phe | Leu | Glu | Pro | Ile | Tyr | Ala | Thr | Asp | | |
| | | | 1140 | | | | | 1145 | | | | | 1150 | | | | |

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 Glu Glu Ala Val Gln Tyr Phe Asp Ile Thr Glu Val Gly Ala Gly Glu
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 Gln Phe Arg Ile Thr Ile Arg Ala Thr Asp Gly Gly Thr Glu Pro Gly
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 Tyr Thr Leu His Ile Ala Ala Ser Asn Ser Pro Asp Ala Thr Gly Ile
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Met Ala
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Leu Thr Phe Ala Gln Asp Cys Ser Tyr Met Val Ala Ile Pro Arg Pro
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Glu Arg Pro Asp Phe Pro Ser Leu Asn Phe Asp Gly Ile Pro Trp Ser
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Arg Tyr Pro Leu Ile Pro Val Glu Gly Arg Glu Asp Val Cys Met Asn
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| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Ser | Lys | Thr | Asp | Val | Val | Ile | Ile | Val | Asn | Asp | Val | Asn | Asp | Gln | Ala | | |
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| Pro | Leu | Pro | Phe | Arg | Glu | Glu | Tyr | Ser | Ile | Glu | Ile | Met | Glu | Glu | Thr | | |
| | | 405 | | | | | 410 | | | | | 415 | | | | | |
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| Arg | Ala | His | Glu | Ala | Phe | Tyr | Ile | Ala | Pro | Glu | Val | Gly | Tyr | Gln | Arg | | |
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| Gln | Ser | Phe | Ile | Met | Gly | Thr | Gln | Asn | His | His | Met | Leu | Asp | Phe | Glu | | |
| | | | 470 | | | | | 475 | | | | | 480 | | | | |
| gtg | cca | gag | ttc | cag | aat | ata | caa | ctg | agg | gcc | gta | gcg | ata | gac | atg | 1664 | |
| Val | Pro | Glu | Phe | Gln | Asn | Ile | Gln | Leu | Arg | Ala | Val | Ala | Ile | Asp | Met | | |
| | | 485 | | | | | 490 | | | | | 495 | | | | | |
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| Asp | Asp | Pro | Lys | Trp | Val | Gly | Ile | Ala | Ile | Ile | Asn | Ile | Lys | Leu | Ile | | |
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| Asn | Trp | Asn | Asp | Glu | Leu | Pro | Met | Phe | Glu | Ser | Asp | Val | Gln | Thr | Val | | |
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| Ser | Phe | Asp | Glu | Thr | Glu | Gly | Ala | Gly | Phe | Tyr | Val | Ala | Thr | Val | Val | | |
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| Ala | Lys | Asp | Arg | Asp | Val | Gly | Asp | Lys | Val | Glu | His | Ser | Leu | Met | Gly | | |
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| Asn | Ala | Val | Ser | Tyr | Leu | Arg | Ile | Asp | Lys | Glu | Thr | Gly | Glu | Ile | Phe | | |
| | | 565 | | | | | 570 | | | | | 575 | | | | | |
| gtc | aca | gaa | aac | gaa | gca | ttc | aac | tat | cac | agg | cag | aac | gaa | ctc | ttt | 1952 | |
| Val | Thr | Glu | Asn | Glu | Ala | Phe | Asn | Tyr | His | Arg | Gln | Asn | Glu | Leu | Phe | | |
| | | 580 | | | | 585 | | | | | 590 | | | | | | |
| gtg | cag | ata | cca | gct | gac | gac | acg | ctg | ggc | gag | cct | tac | aac | acc | aac | 2000 | |
| Val | Gln | Ile | Pro | Ala | Asp | Asp | Thr | Leu | Gly | Glu | Pro | Tyr | Asn | Thr | Asn | | |
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| act | act | cag | ttg | gtg | atc | aag | ctg | cgg | gac | att | aac | aac | acc | cct | cct | 2048 | |
| Thr | Thr | Gln | Leu | Val | Ile | Lys | Leu | Arg | Asp | Ile | Asn | Asn | Thr | Pro | Pro | | |
| | | | | 615 | | | | | 620 | | | | | 625 | | | |
| acg | ctc | agg | ctg | cct | cgc | gcc | act | cca | tca | gtg | gaa | gag | aac | gtg | ccc | 2096 | |
| Thr | Leu | Arg | Leu | Pro | Arg | Ala | Thr | Pro | Ser | Val | Glu | Glu | Asn | Val | Pro | | |
| | | | 630 | | | | | 635 | | | | | 640 | | | | |

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| gac ggg ttt gtg atc ccc acg cag ctg cac gcc acg gac ccc gac act Asp Gly Phe Val Ile Pro Thr Gln Leu His Ala Thr Asp Pro Asp Thr 645 650 655 | 2144 |
| aca gct gag ctg cgc ttc gag atc gac tgg cag aac tcg tat gct acc Thr Ala Glu Leu Arg Phe Glu Ile Asp Trp Gln Asn Ser Tyr Ala Thr 660 665 670 | 2192 |
| aag cag gga cgg aat act gac tct aag gag tat atc ggt tgt ata gaa Lys Gln Gly Arg Asn Thr Asp Ser Lys Glu Tyr Ile Gly Cys Ile Glu 675 680 685 690 | 2240 |
| atc gag acg ata tac ccg aat ata aac cag cga ggc aac gcc atc ggc Ile Glu Thr Ile Tyr Pro Asn Ile Asn Gln Arg Gly Asn Ala Ile Gly 695 700 705 | 2288 |
| cgc gtg gta gtg cga gag atc cgg gac ggc gtc acc ata gac tat gag Arg Val Val Val Arg Glu Ile Arg Asp Gly Val Thr Ile Asp Tyr Glu 710 715 720 | 2336 |
| atg ttt gaa gtt cta tac ctc acc gtc att gtg agg gat ctc aac acc Met Phe Glu Val Leu Tyr Leu Thr Val Ile Val Arg Asp Leu Asn Thr 725 730 735 | 2384 |
| gtt att gga gaa gac cat gat ata tcc aca ttc acg atc acg ata ata Val Ile Gly Glu Asp His Asp Ile Ser Thr Phe Thr Ile Thr Ile Ile 740 745 750 | 2432 |
| gac atg aac gac aac cct ccc ctg tgg gtg gaa ggc acc ctg acg caa Asp Met Asn Asp Asn Pro Pro Leu Trp Val Glu Gly Thr Leu Thr Gln 755 760 765 770 | 2480 |
| gag ttc cgt gtg cga gag gtg gca gcc tca gga gtt gtt ata gga tcc Glu Phe Arg Val Arg Glu Val Ala Ala Ser Gly Val Val Ile Gly Ser 775 780 785 | 2528 |
| gta ctg gcc act gat atc gac gga ccg ctg tat aat caa gtg cgg tat Val Leu Ala Thr Asp Ile Asp Gly Pro Leu Tyr Asn Gln Val Arg Tyr 790 795 800 | 2576 |
| act att act ccc aga cta gac act cca gaa gac cta gtg gac ata gac Thr Ile Thr Pro Arg Leu Asp Thr Pro Glu Asp Leu Val Asp Ile Asp 805 810 815 | 2624 |
| ttc aac acg ggt cag atc tcc gta aag tta cac cag gct ata gac gcg Phe Asn Thr Gly Gln Ile Ser Val Lys Leu His Gln Ala Ile Asp Ala 820 825 830 | 2672 |
| gac gag ccg ccg cgt cag aac ctc tac tac acc gtc ata gct agt gac Asp Glu Pro Pro Arg Gln Asn Leu Tyr Tyr Thr Val Ile Ala Ser Asp 835 840 845 850 | 2720 |
| aag tgt gac ctc ctt act gtc act gag tgt ccg cct gac cct act tac Lys Cys Asp Leu Leu Thr Val Thr Glu Cys Pro Pro Asp Pro Thr Tyr 855 860 865 | 2768 |
| ttt gag aca ccg gga gag att acc atc cac ata acg gac acg aac aac Phe Glu Thr Pro Gly Glu Ile Thr Ile His Ile Thr Asp Thr Asn Asn 870 875 880 | 2816 |
| aag gtg cct caa gtg gaa gac gac aag ttc gag gcg acg gtg tac atc | 2864 |

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|-----------------------------------------------------------------|---------------------|
| Lys Val Pro Gln Val Glu Asp Asp Lys Phe Glu Ala Thr Val Tyr Ile | |
| 885 | 890 895 |
| tac gag ggc gcg gac gat gga caa cat gtc gtg cag atc tac gcc agc | 2912 |
| Tyr Glu Gly Ala Asp Asp Gly Gln His Val Val Gln Ile Tyr Ala Ser | |
| 900 | 905 910 |
| gat ctg gat aga gat gaa atc tac cac aaa gtg agc tac cag atc aac | 2960 |
| Asp Leu Asp Arg Asp Glu Ile Tyr His Lys Val Ser Tyr Gln Ile Asn | |
| 915 | 920 925 930 |
| tac gcg atc aac tct cgt ctc cgc gac ttc ttc gag atg gac ctg gag | 3008 |
| Tyr Ala Ile Asn Ser Arg Leu Arg Asp Phe Phe Glu Met Asp Leu Glu | |
| | 935 940 945 |
| tcc ggc ctc gtg tac gtc aac aac acc gcc gcc gag ctg ctg gac agg | 3056 |
| Ser Gly Leu Val Tyr Val Asn Asn Thr Ala Gly Glu Leu Leu Asp Arg | |
| | 950 955 960 |
| gac ggc gac gag ccc aca cat cgc atc ttc ttc aat gtc atc gat aac | 3104 |
| Asp Gly Asp Glu Pro Thr His Arg Ile Phe Phe Asn Val Ile Asp Asn | |
| | 965 970 975 |
| ttc tat gga gaa gga gat ggc aac cgc aat cag aac gag aca caa gtg | 3152 |
| Phe Tyr Gly Glu Gly Asp Gly Asn Arg Asn Gln Asn Glu Thr Gln Val | |
| | 980 985 990 |
| tta gta gta ttg ctg gac atc aat gac aac tat ccg gaa ctg cct gaa | 3200 |
| Leu Val Val Leu Leu Asp Ile Asn Asp Asn Tyr Pro Glu Leu Pro Glu | |
| | 995 1000 1005 1010 |
| act atc cca tgg gct atc tct gag agc tta gag ctg ggt gag cgt gta | 3248 |
| Thr Ile Pro Trp Ala Ile Ser Glu Ser Leu Glu Leu Gly Glu Arg Val | |
| | 1015 1020 1025 |
| cag cca gaa atc ttt gcc cgg gac cgc gac gaa ccc gga aca gac aac | 3296 |
| Gln Pro Glu Ile Phe Ala Arg Asp Arg Asp Glu Pro Gly Thr Asp Asn | |
| | 1030 1035 1040 |
| tcc cgc gtc gcc tat gcc atc aca ggc ctc gcc agc act gac cgg gac | 3344 |
| Ser Arg Val Ala Tyr Ala Ile Thr Gly Leu Ala Ser Thr Asp Arg Asp | |
| | 1045 1050 1055 |
| ata caa gtg cct aat ctc ttc aac atg atc act ata gag agg gac agg | 3392 |
| Ile Gln Val Pro Asn Leu Phe Asn Met Ile Thr Ile Glu Arg Asp Arg | |
| | 1060 1065 1070 |
| gga att gat cag aca gga ata ctt gag gca gct atg gat ttg aga ggc | 3440 |
| Gly Ile Asp Gln Thr Gly Ile Leu Glu Ala Ala Met Asp Leu Arg Gly | |
| | 1075 1080 1085 1090 |
| tat tgg ggc acc tat caa ata gat att cag gcg tat gac cat gga ata | 3488 |
| Tyr Trp Gly Thr Tyr Gln Ile Asp Ile Gln Ala Tyr Asp His Gly Ile | |
| | 1095 1100 1105 |
| cct caa agg att tca aat cag aag tac ccg ctg gtg att aga cct tac | 3536 |
| Pro Gln Arg Ile Ser Asn Gln Lys Tyr Pro Leu Val Ile Arg Pro Tyr | |
| | 1110 1115 1120 |
| aac ttc cac gac cca gtg ttc gtg ttc cct caa cct gga tcc act atc | 3584 |
| Asn Phe His Asp Pro Val Phe Val Phe Pro Gln Pro Gly Ser Thr Ile | |
| | 1125 1130 1135 |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| aga ctg gca aag gag cga gca gta gtc aac ggt ata ctg gct aca gta Arg Leu Ala Lys Glu Arg Ala Val Val Asn Gly Ile Leu Ala Thr Val 1140 1145 1150 | 3632 |
| gac ggc gaa ttt ctg gac aga atc gtt gcc acc gac gag gat ggt tta Asp Gly Glu Phe Leu Asp Arg Ile Val Ala Thr Asp Glu Asp Gly Leu 1155 1160 1165 1170 | 3680 |
| gaa gct gga ctt gtc aca ttc tct atc gcc gga gat gat gaa gat gct Glu Ala Gly Leu Val Thr Phe Ser Ile Ala Gly Asp Asp Glu Asp Ala 1175 1180 1185 | 3728 |
| cag ttc ttc gac gtg ttg aac gac gga gtg aac tcg ggt gct ctc acc Gln Phe Phe Asp Val Leu Asn Asp Gly Val Asn Ser Gly Ala Leu Thr 1190 1195 1200 | 3776 |
| ctc acg cgg ctc ttc cct gaa gag ttc cga gag ttc cag gtg acg att Leu Thr Arg Leu Phe Pro Glu Glu Phe Arg Glu Phe Gln Val Thr Ile 1205 1210 1215 | 3824 |
| cgt gct acg gac ggt gga act gag cct ggt cca agg agt acg gac tgc Arg Ala Thr Asp Gly Gly Thr Glu Pro Gly Pro Arg Ser Thr Asp Cys 1220 1225 1230 | 3872 |
| ttg gtg acc gta gtg ttt gta ccc acg cag gga gag ccc gtg ttc gag Leu Val Thr Val Val Phe Val Pro Thr Gln Gly Glu Pro Val Phe Glu 1235 1240 1245 1250 | 3920 |
| gat agg act tac acg gtt gct ttt gtt gaa aaa gat gag ggt atg tta Asp Arg Thr Tyr Thr Val Ala Phe Val Glu Lys Asp Glu Gly Met Leu 1255 1260 1265 | 3968 |
| gag gag gcg gaa cta cct cgc gcc tca gac cca agg aac atc atg tgt Glu Glu Ala Glu Leu Pro Arg Ala Ser Asp Pro Arg Asn Ile Met Cys 1270 1275 1280 | 4016 |
| gaa gat gat tgt cac gac acc tat tac agc att gtt gga ggc aat tcg Glu Asp Asp Cys His Asp Thr Tyr Tyr Ser Ile Val Gly Gly Asn Ser 1285 1290 1295 | 4064 |
| ggt gaa cac ttc aca gta gac cct cgt acc aac gtg cta tcc ctg gtg Gly Glu His Phe Thr Val Asp Pro Arg Thr Asn Val Leu Ser Leu Val 1300 1305 1310 | 4112 |
| aag ccg ctg gac cgc tcc gaa cag gag aca cac acc ctc atc att gga Lys Pro Leu Asp Arg Ser Glu Gln Glu Thr His Thr Leu Ile Ile Gly 1315 1320 1325 1330 | 4160 |
| gcc agc gac act ccc aac ccg gcc gcc gtc ctg cag gct tct aca ctc Ala Ser Asp Thr Pro Asn Pro Ala Ala Val Leu Gln Ala Ser Thr Leu 1335 1340 1345 | 4208 |
| act gtc act gtt aat gtt cga gaa gcg aac ccg cga cca gtg ttc caa Thr Val Thr Val Asn Val Arg Glu Ala Asn Pro Arg Pro Val Phe Gln 1350 1355 1360 | 4256 |
| aga gca ctc tac aca gct ggc atc tct gct ggc gat ttc atc gaa aga Arg Ala Leu Tyr Thr Ala Gly Ile Ser Ala Gly Asp Phe Ile Glu Arg 1365 1370 1375 | 4304 |
| aat ctg ctg act tta gta gcg aca cat tca gaa gat ctg ccc atc act | 4352 |

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|------------------------------------------------------------------------------------------------------------------------------------------------|------|------|-----------|
| Asn Leu Leu Thr Leu Val Ala Thr His Ser Glu Asp Leu Pro Ile Thr 1380 | 1385 | 1390 | |
| tac act ctg ata caa gag tcc atg gaa gca gac ccc aca ctc gaa gct Tyr Thr Leu Ile Gln Glu Ser Met Glu Ala Asp Pro Thr Leu Glu Ala 1395 | 1400 | 1405 | 1410 4400 |
| gtt cag gag tca gcc ttc atc ctc aac cct gag act gga gtc ctg tcc Val Gln Glu Ser Ala Phe Ile Leu Asn Pro Glu Thr Gly Val Leu Ser 1415 | 1420 | 1425 | 4448 |
| ctc aac ttc cag cca acc gcc tcc atg cac ggc atg ttc gag ttc gaa Leu Asn Phe Gln Pro Thr Ala Ser Met His Gly Met Phe Glu Phe Glu 1430 | 1435 | 1440 | 4496 |
| gtc aaa gcc act gat tca agg aca gaa act gcc cgc acg gaa gtg aag Val Lys Ala Thr Asp Ser Arg Thr Glu Thr Ala Arg Thr Glu Val Lys 1445 | 1450 | 1455 | 4544 |
| gtg tac ctg ata tca gac cgc aac cga gtg ttc ttc acg ttc aat aac Val Tyr Leu Ile Ser Asp Arg Thr Asn Arg Val Phe Phe Thr Phe Asn Asn 1460 | 1465 | 1470 | 4592 |
| cca ctg cct gaa gtc aca ccc cag gaa gat ttc ata gcg gag acg ttc Pro Leu Pro Glu Val Thr Pro Gln Glu Asp Phe Ile Ala Glu Thr Phe 1475 | 1480 | 1485 | 1490 4640 |
| acg gca ttc ttc ggc atg acg tgc aac atc gac cag tcg tgg tgg gcc Thr Ala Phe Phe Gly Met Thr Cys Asn Ile Asp Gln Ser Trp Trp Ala 1495 | 1500 | 1505 | 4688 |
| agc gat ccc gtc acc ggc gcc acc aag gac gac cag act gaa gtc agg Ser Asp Pro Val Thr Gly Ala Thr Lys Asp Asp Gln Thr Glu Val Arg 1510 | 1515 | 1520 | 4736 |
| gct cat ttc atc agg gac gac ctt ccc gtg cct gct gag gag att gaa Ala His Phe Ile Arg Asp Asp Leu Pro Val Pro Ala Glu Glu Ile Glu 1525 | 1530 | 1535 | 4784 |
| cag tta cgc ggt aac cca act cta gta aat agc atc caa cga gcc ctg Gln Leu Arg Gly Asn Pro Thr Leu Val Asn Ser Ile Gln Arg Ala Leu 1540 | 1545 | 1550 | 4832 |
| gag gaa cag aac ctg cag cta gcc gac ctg ttc acg ggc gag acg ccc Glu Glu Gln Asn Leu Gln Leu Ala Asp Leu Phe Thr Gly Glu Thr Pro 1555 | 1560 | 1565 | 1570 4880 |
| atc ctc ggc ggc gac gcg cag gct cga gcc ctg tac gcg ctg gcg gcg Ile Leu Gly Gly Asp Ala Gln Ala Arg Ala Leu Tyr Ala Leu Ala Ala 1575 | 1580 | 1585 | 4928 |
| gtg gcg gcg gca ctc gcg ctg att gtt gtt gtg ctg ctg att gtg ttc Val Ala Ala Ala Leu Ala Leu Ile Val Val Val Leu Leu Ile Val Phe 1590 | 1595 | 1600 | 4976 |
| ttt gtt agg act agg act ctg aac cgg cgc ttg caa gct ctg tcc atg Phe Val Arg Thr Arg Thr Leu Asn Arg Arg Leu Gln Ala Leu Ser Met 1605 | 1610 | 1615 | 5024 |
| acc aag tac agt tcg caa gac tct ggg ttg aac cgc gtg ggt ttg gcg Thr Lys Tyr Ser Ser Gln Asp Ser Gly Leu Asn Arg Val Gly Leu Ala 1620 | 1625 | 1630 | 5072 |

gcg ccg ggc acc aat aag cac gct gtc gag ggc tcc aac ccc atc tgg 5120
Ala Pro Gly Thr Asn Lys His Ala Val Glu Gly Ser Asn Pro Ile Trp
1635 1640 1645 1650

aat gaa acg ttg aag gct ccg gac ttt gac gct ctt agc gag cag tcg 5168
Asn Glu Thr Leu Lys Ala Pro Asp Phe Asp Ala Leu Ser Glu Gln Ser
1655 1660 1665

tac gac tca gac cta atc ggc atc gaa gac ttg ccg cag ttc agg aac 5216
Tyr Asp Ser Asp Leu Ile Gly Ile Glu Asp Leu Pro Gln Phe Arg Asn
1670 1675 1680

gac tac ttc cca cct gag gag ggc agc tcc atg cga gga gtc gtc aat 5264
Asp Tyr Phe Pro Pro Glu Glu Gly Ser Ser Met Arg Gly Val Val Asn
1685 1690 1695

gaa cac gtg cct gaa tca ata gca aac cat aac aac aac ttc ggg ttt 5312
Glu His Val Pro Glu Ser Ile Ala Asn His Asn Asn Asn Phe Gly Phe
1700 1705 1710

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Asn Ser Thr Pro Phe Ser Pro Glu Phe Ala Asn Thr Gln Phe Arg Arg
1715 1720 1725 1730

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<213> Heliothis zea

<400> 4
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Arg Pro Glu Arg Pro Asp Phe Pro Ser Leu Asn Phe Asp Gly Ile Pro
35 40 45
Trp Ser Arg Tyr Pro Leu Ile Pro Val Glu Gly Arg Glu Asp Val Cys
50 55 60
Met Asn Glu Phe Gln Pro Asp Ala Leu Asn Pro Val Thr Val Ile Phe
65 70 75 80
Met Glu Glu Glu Ile Glu Gly Asp Val Ala Ile Ala Arg Leu Asn Tyr
85 90 95
Arg Gly Thr Asn Thr Pro Thr Ile Val Ser Pro Phe Ser Phe Gly Thr
100 105 110
Phe Asn Met Leu Gly Pro Val Ile Arg Arg Ile Pro Glu Asn Gly Gly
115 120 125
Asp Trp His Leu Val Ile Thr Gln Arg Gln Asp Tyr Glu Thr Pro Gly
130 135 140
Met Gln Gln Tyr Ile Phe Asp Val Arg Val Asp Asp Glu Pro Leu Val
145 150 155 160
Ala Thr Val Met Leu Leu Ile Val Asn Ile Asp Asp Asn Asp Pro Ile
165 170 175
Ile Gln Met Phe Glu Pro Cys Asp Ile Pro Glu Arg Gly Glu Thr Gly
180 185 190
Ile Thr Ser Cys Lys Tyr Thr Val Ser Asp Ala Asp Gly Glu Ile Ser
195 200 205
Thr Arg Phe Met Arg Phe Glu Ile Ser Ser Asp Arg Asp Asp Asp Glu

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|-----------------------------------------------------------------|---------------------------------------------|-----|-----|-----|
| 210 | | 215 | | 220 |
| Tyr Phe Glu Leu Val | Arg Glu Asn Ile Gln Gly Gln Trp Met Tyr Val | | | |
| 225 | 230 | 235 | 240 | |
| His Met Arg Val His Val Lys Lys Pro Leu Asp Tyr Glu Glu Asn Pro | | | | |
| | 245 | 250 | 255 | |
| Leu His Leu Phe Arg Val Thr Ala Tyr Asp Ser Leu Pro Asn Thr His | | | | |
| | 260 | 265 | 270 | |
| Thr Val Thr Met Met Val Gln Val Glu Asn Val Glu Asn Arg Pro Pro | | | | |
| | 275 | 280 | 285 | |
| Arg Trp Met Glu Ile Phe Ala Val Gln Gln Phe Asp Glu Lys Thr Glu | | | | |
| | 290 | 295 | 300 | |
| Gln Ser Phe Arg Val Arg Ala Ile Asp Gly Asp Thr Gly Ile Asp Lys | | | | |
| 305 | 310 | 315 | 320 | |
| Pro Ile Phe Tyr Arg Ile Glu Thr Glu Lys Gly Glu Glu Asp Leu Phe | | | | |
| | 325 | 330 | 335 | |
| Ser Ile Gln Thr Ile Glu Gly Gly Arg Glu Gly Ala Trp Phe Asn Val | | | | |
| | 340 | 345 | 350 | |
| Ala Pro Ile Asp Arg Asp Thr Leu Glu Lys Glu Val Phe His Val Ser | | | | |
| | 355 | 360 | 365 | |
| Ile Ile Ala Tyr Lys Tyr Gly Asp Asn Asp Val Glu Gly Ser Ser Ser | | | | |
| | 370 | 375 | 380 | |
| Phe Gln Ser Lys Thr Asp Val Val Ile Ile Val Asn Asp Val Asn Asp | | | | |
| 385 | 390 | 395 | 400 | |
| Gln Ala Pro Leu Pro Phe Arg Glu Glu Tyr Ser Ile Glu Ile Met Glu | | | | |
| | 405 | 410 | 415 | |
| Glu Thr Ala Met Thr Leu Asn Leu Glu Asp Phe Gly Phe His Asp Arg | | | | |
| | 420 | 425 | 430 | |
| Asp Leu Gly Pro His Ala Gln Tyr Thr Val His Leu Glu Ser Ile His | | | | |
| | 435 | 440 | 445 | |
| Pro Pro Arg Ala His Glu Ala Phe Tyr Ile Ala Pro Glu Val Gly Tyr | | | | |
| | 450 | 455 | 460 | |
| Gln Arg Gln Ser Phe Ile Met Gly Thr Gln Asn His His Met Leu Asp | | | | |
| 465 | 470 | 475 | 480 | |
| Phe Glu Val Pro Glu Phe Gln Asn Ile Gln Leu Arg Ala Val Ala Ile | | | | |
| | 485 | 490 | 495 | |
| Asp Met Asp Asp Pro Lys Trp Val Gly Ile Ala Ile Ile Asn Ile Lys | | | | |
| | 500 | 505 | 510 | |
| Leu Ile Asn Trp Asn Asp Glu Leu Pro Met Phe Glu Ser Asp Val Gln | | | | |
| | 515 | 520 | 525 | |
| Thr Val Ser Phe Asp Glu Thr Glu Gly Ala Gly Phe Tyr Val Ala Thr | | | | |
| | 530 | 535 | 540 | |
| Val Val Ala Lys Asp Arg Asp Val Gly Asp Lys Val Glu His Ser Leu | | | | |
| 545 | 550 | 555 | 560 | |
| Met Gly Asn Ala Val Ser Tyr Leu Arg Ile Asp Lys Glu Thr Gly Glu | | | | |
| | 565 | 570 | 575 | |
| Ile Phe Val Thr Glu Asn Glu Ala Phe Asn Tyr His Arg Gln Asn Glu | | | | |
| | 580 | 585 | 590 | |
| Leu Phe Val Gln Ile Pro Ala Asp Asp Thr Leu Gly Glu Pro Tyr Asn | | | | |
| | 595 | 600 | 605 | |
| Thr Asn Thr Thr Gln Leu Val Ile Lys Leu Arg Asp Ile Asn Asn Thr | | | | |
| | 610 | 615 | 620 | |
| Pro Pro Thr Leu Arg Leu Pro Arg Ala Thr Pro Ser Val Glu Glu Asn | | | | |
| 625 | 630 | 635 | 640 | |
| Val Pro Asp Gly Phe Val Ile Pro Thr Gln Leu His Ala Thr Asp Pro | | | | |
| | 645 | 650 | 655 | |
| Asp Thr Thr Ala Glu Leu Arg Phe Glu Ile Asp Trp Gln Asn Ser Tyr | | | | |
| | 660 | 665 | 670 | |
| Ala Thr Lys Gln Gly Arg Asn Thr Asp Ser Lys Glu Tyr Ile Gly Cys | | | | |
| | 675 | 680 | 685 | |
| Ile Glu Ile Glu Thr Ile Tyr Pro Asn Ile Asn Gln Arg Gly Asn Ala | | | | |
| | 690 | 695 | 700 | |
| Ile Gly Arg Val Val Val Arg Glu Ile Arg Asp Gly Val Thr Ile Asp | | | | |

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|-----------------------------------------------------------------|------|-----|------|-----|------|-----|
| 705 | | 710 | | 715 | | 720 |
| Tyr Glu Met Phe Glu Val Leu Tyr Leu Thr Val Ile Val Arg Asp Leu | | | | | | |
| | 725 | | 730 | | 735 | |
| Asn Thr Val Ile Gly Glu Asp His Asp Ile Ser Thr Phe Thr Ile Thr | | | | | | |
| | 740 | | 745 | | 750 | |
| Ile Ile Asp Met Asn Asp Asn Pro Pro Leu Trp Val Glu Gly Thr Leu | | | | | | |
| | 755 | | 760 | | 765 | |
| Thr Gln Glu Phe Arg Val Arg Glu Val Ala Ala Ser Gly Val Val Ile | | | | | | |
| | 770 | | 775 | | 780 | |
| Gly Ser Val Leu Ala Thr Asp Ile Asp Gly Pro Leu Tyr Asn Gln Val | | | | | | |
| | 785 | | 790 | | 795 | |
| Arg Tyr Thr Ile Thr Pro Arg Leu Asp Thr Pro Glu Asp Leu Val Asp | | | | | | |
| | 805 | | 810 | | 815 | |
| Ile Asp Phe Asn Thr Gly Gln Ile Ser Val Lys Leu His Gln Ala Ile | | | | | | |
| | 820 | | 825 | | 830 | |
| Asp Ala Asp Glu Pro Pro Arg Gln Asn Leu Tyr Tyr Thr Val Ile Ala | | | | | | |
| | 835 | | 840 | | 845 | |
| Ser Asp Lys Cys Asp Leu Leu Thr Val Thr Glu Cys Pro Pro Asp Pro | | | | | | |
| | 850 | | 855 | | 860 | |
| Thr Tyr Phe Glu Thr Pro Gly Glu Ile Thr Ile His Ile Thr Asp Thr | | | | | | |
| | 865 | | 870 | | 875 | |
| Asn Asn Lys Val Pro Gln Val Glu Asp Asp Lys Phe Glu Ala Thr Val | | | | | | |
| | 885 | | 890 | | 895 | |
| Tyr Ile Tyr Glu Gly Ala Asp Asp Gly Gln His Val Val Gln Ile Tyr | | | | | | |
| | 900 | | 905 | | 910 | |
| Ala Ser Asp Leu Asp Arg Asp Glu Ile Tyr His Lys Val Ser Tyr Gln | | | | | | |
| | 915 | | 920 | | 925 | |
| Ile Asn Tyr Ala Ile Asn Ser Arg Leu Arg Asp Phe Phe Glu Met Asp | | | | | | |
| | 930 | | 935 | | 940 | |
| Leu Glu Ser Gly Leu Val Tyr Val Asn Asn Thr Ala Gly Glu Leu Leu | | | | | | |
| | 945 | | 950 | | 955 | |
| Asp Arg Asp Gly Asp Glu Pro Thr His Arg Ile Phe Phe Asn Val Ile | | | | | | |
| | 965 | | 970 | | 975 | |
| Asp Asn Phe Tyr Gly Glu Gly Asp Gly Asn Arg Asn Gln Asn Glu Thr | | | | | | |
| | 980 | | 985 | | 990 | |
| Gln Val Leu Val Val Leu Leu Asp Ile Asn Asp Asn Tyr Pro Glu Leu | | | | | | |
| | 995 | | 1000 | | 1005 | |
| Pro Glu Thr Ile Pro Trp Ala Ile Ser Glu Ser Leu Glu Leu Gly Glu | | | | | | |
| | 1010 | | 1015 | | 1020 | |
| Arg Val Gln Pro Glu Ile Phe Ala Arg Asp Arg Asp Glu Pro Gly Thr | | | | | | |
| | 1025 | | 1030 | | 1035 | |
| Asp Asn Ser Arg Val Ala Tyr Ala Ile Thr Gly Leu Ala Ser Thr Asp | | | | | | |
| | 1045 | | 1050 | | 1055 | |
| Arg Asp Ile Gln Val Pro Asn Leu Phe Asn Met Ile Thr Ile Glu Arg | | | | | | |
| | 1060 | | 1065 | | 1070 | |
| Asp Arg Gly Ile Asp Gln Thr Gly Ile Leu Glu Ala Ala Met Asp Leu | | | | | | |
| | 1075 | | 1080 | | 1085 | |
| Arg Gly Tyr Trp Gly Thr Tyr Gln Ile Asp Ile Gln Ala Tyr Asp His | | | | | | |
| | 1090 | | 1095 | | 1100 | |
| Gly Ile Pro Gln Arg Ile Ser Asn Gln Lys Tyr Pro Leu Val Ile Arg | | | | | | |
| | 1105 | | 1110 | | 1115 | |
| Pro Tyr Asn Phe His Asp Pro Val Phe Val Phe Pro Gln Pro Gly Ser | | | | | | |
| | 1125 | | 1130 | | 1135 | |
| Thr Ile Arg Leu Ala Lys Glu Arg Ala Val Val Asn Gly Ile Leu Ala | | | | | | |
| | 1140 | | 1145 | | 1150 | |
| Thr Val Asp Gly Glu Phe Leu Asp Arg Ile Val Ala Thr Asp Glu Asp | | | | | | |
| | 1155 | | 1160 | | 1165 | |
| Gly Leu Glu Ala Gly Leu Val Thr Phe Ser Ile Ala Gly Asp Asp Glu | | | | | | |
| | 1170 | | 1175 | | 1180 | |
| Asp Ala Gln Phe Phe Asp Val Leu Asn Asp Gly Val Asn Ser Gly Ala | | | | | | |
| | 1185 | | 1190 | | 1195 | |
| Leu Thr Leu Thr Arg Leu Phe Pro Glu Glu Phe Arg Glu Phe Gln Val | | | | | | |

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|-----------------------------------------------------------------|---------------------------------|------|------|--|------|
| | 1205 | | 1210 | | 1215 |
| Thr Ile Arg Ala Thr Asp Gly Gly | Thr Glu Pro Gly Pro Arg Ser Thr | | | | |
| 1220 | 1225 | 1230 | | | |
| Asp Cys Leu Val Thr Val Val Phe Val Pro Thr Gln Gly Glu Pro Val | | | | | |
| 1235 | 1240 | 1245 | | | |
| Phe Glu Asp Arg Thr Tyr Thr Val Ala Phe Val Glu Lys Asp Glu Gly | | | | | |
| 1250 | 1255 | 1260 | | | |
| Met Leu Glu Glu Ala Glu Leu Pro Arg Ala Ser Asp Pro Arg Asn Ile | | | | | |
| 1265 | 1270 | 1275 | | | 1280 |
| Met Cys Glu Asp Asp Cys His Asp Thr Tyr Tyr Ser Ile Val Gly Gly | | | | | |
| 1285 | 1290 | 1295 | | | |
| Asn Ser Gly Glu His Phe Thr Val Asp Pro Arg Thr Asn Val Leu Ser | | | | | |
| 1300 | 1305 | 1310 | | | |
| Leu Val Lys Pro Leu Asp Arg Ser Glu Gln Glu Thr His Thr Leu Ile | | | | | |
| 1315 | 1320 | 1325 | | | |
| Ile Gly Ala Ser Asp Thr Pro Asn Pro Ala Ala Val Leu Gln Ala Ser | | | | | |
| 1330 | 1335 | 1340 | | | |
| Thr Leu Thr Val Thr Val Asn Val Arg Glu Ala Asn Pro Arg Pro Val | | | | | |
| 1345 | 1350 | 1355 | | | 1360 |
| Phe Gln Arg Ala Leu Tyr Thr Ala Gly Ile Ser Ala Gly Asp Phe Ile | | | | | |
| 1365 | 1370 | 1375 | | | |
| Glu Arg Asn Leu Thr Leu Val Ala Thr His Ser Glu Asp Leu Pro | | | | | |
| 1380 | 1385 | 1390 | | | |
| Ile Thr Tyr Thr Leu Ile Gln Glu Ser Met Glu Ala Asp Pro Thr Leu | | | | | |
| 1395 | 1400 | 1405 | | | |
| Glu Ala Val Gln Glu Ser Ala Phe Ile Leu Asn Pro Glu Thr Gly Val | | | | | |
| 1410 | 1415 | 1420 | | | |
| Leu Ser Leu Asn Phe Gln Pro Thr Ala Ser Met His Gly Met Phe Glu | | | | | |
| 1425 | 1430 | 1435 | | | 1440 |
| Phe Glu Val Lys Ala Thr Asp Ser Arg Thr Glu Thr Ala Arg Thr Glu | | | | | |
| 1445 | 1450 | 1455 | | | |
| Val Lys Val Tyr Leu Ile Ser Asp Arg Asn Arg Val Phe Phe Thr Phe | | | | | |
| 1460 | 1465 | 1470 | | | |
| Asn Asn Pro Leu Pro Glu Val Thr Pro Gln Glu Asp Phe Ile Ala Glu | | | | | |
| 1475 | 1480 | 1485 | | | |
| Thr Phe Thr Ala Phe Phe Gly Met Thr Cys Asn Ile Asp Gln Ser Trp | | | | | |
| 1490 | 1495 | 1500 | | | |
| Trp Ala Ser Asp Pro Val Thr Gly Ala Thr Lys Asp Asp Gln Thr Glu | | | | | |
| 1505 | 1510 | 1515 | | | 1520 |
| Val Arg Ala His Phe Ile Arg Asp Asp Leu Pro Val Pro Ala Glu Glu | | | | | |
| 1525 | 1530 | 1535 | | | |
| Ile Glu Gln Leu Arg Gly Asn Pro Thr Leu Val Asn Ser Ile Gln Arg | | | | | |
| 1540 | 1545 | 1550 | | | |
| Ala Leu Glu Glu Gln Asn Leu Gln Leu Ala Asp Leu Phe Thr Gly Glu | | | | | |
| 1555 | 1560 | 1565 | | | |
| Thr Pro Ile Leu Gly Gly Asp Ala Gln Ala Arg Ala Leu Tyr Ala Leu | | | | | |
| 1570 | 1575 | 1580 | | | |
| Ala Ala Val Ala Ala Ala Leu Ala Leu Ile Val Val Val Leu Leu Ile | | | | | |
| 1585 | 1590 | 1595 | | | 1600 |
| Val Phe Phe Val Arg Thr Arg Thr Leu Asn Arg Arg Leu Gln Ala Leu | | | | | |
| 1605 | 1610 | 1615 | | | |
| Ser Met Thr Lys Tyr Ser Ser Gln Asp Ser Gly Leu Asn Arg Val Gly | | | | | |
| 1620 | 1625 | 1630 | | | |
| Leu Ala Ala Pro Gly Thr Asn Lys His Ala Val Glu Gly Ser Asn Pro | | | | | |
| 1635 | 1640 | 1645 | | | |
| Ile Trp Asn Glu Thr Leu Lys Ala Pro Asp Phe Asp Ala Leu Ser Glu | | | | | |
| 1650 | 1655 | 1660 | | | |
| Gln Ser Tyr Asp Ser Asp Leu Ile Gly Ile Glu Asp Leu Pro Gln Phe | | | | | |
| 1665 | 1670 | 1675 | | | 1680 |
| Arg Asn Asp Tyr Phe Pro Pro Glu Glu Gly Ser Ser Met Arg Gly Val | | | | | |
| 1685 | 1690 | 1695 | | | |
| Val Asn Glu His Val Pro Glu Ser Ile Ala Asn His Asn Asn Phe | | | | | |

[illegible]

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| gtg agg ctg gat att gtg aac atc gac gac aat gcg ccc atc att gag Val Arg Leu Asp Ile Val Asn Ile Asp Asp Asn Ala Pro Ile Ile Glu 170 175 180 | 704 |
| atg tta gag cct tgc aac tta ccg gaa ctt gtt gaa ccc cat gtt aca Met Leu Glu Pro Cys Asn Leu Pro Glu Leu Val Glu Pro His Val Thr 185 190 195 | 752 |
| gaa tgt aaa tat atc gtg tcc gac gca gac ggt ctg atc agt aca agt Glu Cys Lys Tyr Ile Val Ser Asp Ala Asp Gly Leu Ile Ser Thr Ser 200 205 210 | 800 |
| gtt atg agt tat cat ata gac agc gag aga gga gac gaa aaa gta ttc Val Met Ser Tyr His Ile Asp Ser Glu Arg Gly Asp Glu Lys Val Phe 215 220 225 | 848 |
| gaa ctg atc aga aaa gat tat ccg ggc gat tgg acg aag gtg tat atg Glu Leu Ile Arg Lys Asp Tyr Pro Gly Asp Trp Thr Lys Val Tyr Met 230 235 240 245 | 896 |
| gtt ctt gaa ttg aaa aaa tct ctt gat tac gaa gag aat cct cta cac Val Leu Glu Leu Lys Lys Ser Leu Asp Tyr Glu Glu Asn Pro Leu His 250 255 260 | 944 |
| ata ttc aga gtc acg gct tct gat tcc tta cca aac aat agg acc gtg Ile Phe Arg Val Thr Ala Ser Asp Ser Leu Pro Asn Asn Arg Thr Val 265 270 275 | 992 |
| gtc atg atg gtt gaa gta gag aac gtg gaa cat aga aat cct cgg tgg Val Met Met Val Glu Val Glu Asn Val Glu His Arg Asn Pro Arg Trp 280 285 290 | 1040 |
| atg gag atc ttt gct gtg caa cag ttt gat gaa aaa cag gcg aaa tcg Met Glu Ile Phe Ala Val Gln Gln Phe Asp Glu Lys Gln Ala Lys Ser 295 300 305 | 1088 |
| ttc aca gtg cga gct att gat ggc gac acg gga atc aat aaa cct ata Phe Thr Val Arg Ala Ile Asp Gly Asp Thr Gly Ile Asn Lys Pro Ile 310 315 320 325 | 1136 |
| ttc tat cgt ata gaa act gaa gat gaa gac aaa gag ttc ttc agc att Phe Tyr Arg Ile Glu Thr Glu Asp Glu Asp Lys Glu Phe Phe Ser Ile 330 335 340 | 1184 |
| gag aac ata ggg gaa ggc aga gac ggt gcc aga ttc cac gtg gct cct Glu Asn Ile Gly Glu Gly Arg Asp Gly Ala Arg Phe His Val Ala Pro 345 350 355 | 1232 |
| ata gac aga gac tac ctg aaa agg gat atg ttt cat ata aga ata att Ile Asp Arg Asp Tyr Leu Lys Arg Asp Met Phe His Ile Arg Ile Ile 360 365 370 | 1280 |
| gca tat aaa caa ggt gat aat gac aaa gaa ggt gaa tca tcg ttc gag Ala Tyr Lys Gln Gly Asp Asn Asp Lys Glu Gly Ser Ser Phe Glu 375 380 385 | 1328 |
| acc tca gca aat gtg acg att ata att aac gat ata aat gat cag agg Thr Ser Ala Asn Val Thr Ile Ile Ile Asn Asp Ile Asn Asp Gln Arg 390 395 400 405 | 1376 |
| cca gaa ccc ttc cat aaa gaa tac acg atc tcc ata atg gaa gaa act Pro Glu Pro Phe His Lys Glu Tyr Thr Ile Ser Ile Met Glu Glu Thr | 1424 |

| 410 | 415 | 420 | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|------|
| gcg atg acc tta gat ttg caa gag ttt ggt ttc cat gac cgt gac att Ala Met Thr Leu Asp Leu Gln Glu Phe Gly Phe His Asp Arg Asp Ile 425 430 435 | | | 1472 |
| ggt ccc cac gct cag tac gac gtt cac tta gag agt ata cag cca gag Gly Pro His Ala Gln Tyr Asp Val His Leu Glu Ser Ile Gln Pro Glu 440 445 450 | | | 1520 |
| ggg gcc cat acc gct ttc tac atc gcc cct gaa gaa ggt tac cag gcc Gly Ala His Thr Ala Phe Tyr Ile Ala Pro Glu Glu Gly Tyr Gln Ala 455 460 465 | | | 1568 |
| cag tct ttc acc ata ggt act aga atc cat aac atg ttg gat tat gaa Gln Ser Phe Thr Ile Gly Thr Arg Ile His Asn Met Leu Asp Tyr Glu 470 475 480 485 | | | 1616 |
| gat gac gac tac aga cca gga ata aag cta aag gca gta gca att gac Asp Asp Asp Tyr Arg Pro Gly Ile Lys Leu Lys Ala Val Ala Ile Asp 490 495 500 | | | 1664 |
| aga cac gat aac aat cac att ggg gaa gca att att aac att aac ctt Arg His Asp Asn Asn His Ile Gly Glu Ala Ile Ile Asn Ile Asn Leu 505 510 515 | | | 1712 |
| atc aat tgg aat gat gag cta cct ata ttc gac gag gac gcc tac aac Ile Asn Trp Asn Asp Glu Leu Pro Ile Phe Asp Glu Asp Ala Tyr Asn 520 525 530 | | | 1760 |
| gtg aca ttt gag gag acg gtc ggt gat ggc ttc cac att ggt aaa tac Val Thr Phe Glu Glu Thr Val Gly Asp Gly Phe His Ile Gly Lys Tyr 535 540 545 | | | 1808 |
| cgg gct aaa gac aga gac atc ggt gac ata gtc gag cac tcg ata ttg Arg Ala Lys Asp Arg Asp Ile Gly Asp Ile Val Glu His Ser Ile Leu 550 555 560 565 | | | 1856 |
| ggc aac gct gca aac ttc ctg aga att gac ata gat act gga gat gtg Gly Asn Ala Ala Asn Phe Leu Arg Ile Asp Ile Asp Thr Gly Asp Val 570 575 580 | | | 1904 |
| tac gtg tca cgg gac gat tac ttt gat tat caa aga cag aac gaa atc Tyr Val Ser Arg Asp Asp Tyr Phe Asp Tyr Gln Arg Gln Asn Glu Ile 585 590 595 | | | 1952 |
| ata gtt cag att ctg gct gtt gat aca cta ggt tta cct cag aac agg Ile Val Gln Ile Leu Ala Val Asp Thr Leu Gly Leu Pro Gln Asn Arg 600 605 610 | | | 2000 |
| gct acc aca cag ctc acg ata ttt ttg gaa gac atc aac aac acg cca Ala Thr Thr Gln Leu Thr Ile Phe Leu Glu Asp Ile Asn Asn Thr Pro 615 620 625 | | | 2048 |
| cct ata ctg cga ctg cca cgt tcc agt cca agt gta gaa gag aac gtt Pro Ile Leu Arg Leu Pro Arg Ser Ser Pro Ser Val Glu Glu Asn Val 630 635 640 645 | | | 2096 |
| gaa gtc ggg cac ccg att acc gag ggg cta acg gcg aca gac cca gac Glu Val Gly His Pro Ile Thr Glu Gly Leu Thr Ala Thr Asp Pro Asp 650 655 660 | | | 2144 |

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| acc aca gcc gat tta cac ttc gag atc gat tgg gac aat tct tac gct Thr Thr Ala Asp Leu His Phe Glu Ile Asp Trp Asp Asn Ser Tyr Ala 665 670 675 | 2192 |
| acg aag cag ggc acc aat gga ccc aac act gca gac tac cac gga tgc Thr Lys Gln Gly Thr Asn Gly Pro Asn Thr Ala Asp Tyr His Gly Cys 680 685 690 | 2240 |
| gta gaa atc ctg acg gta tac cca gat cct gac aat cac ggg aga gct Val Glu Ile Leu Thr Val Tyr Pro Asp Pro Asp Asn His Gly Arg Ala 695 700 705 | 2288 |
| gag ggt cac ttg gtg gca cgt gag gtc agt gat ggc gtg acc atc gat Glu Gly His Leu Val Ala Arg Glu Val Ser Asp Gly Val Thr Ile Asp 710 715 720 725 | 2336 |
| tac gag aag ttt gag gtg ctg tac ctc gtc gtc agg gtg ata gat cgc Tyr Glu Lys Phe Glu Val Leu Tyr Leu Val Val Arg Val Ile Asp Arg 730 735 740 | 2384 |
| aac act gtc att ggc cct gat tat gac gaa gca atg ctg acg gtg acg Asn Thr Val Ile Gly Pro Asp Tyr Asp Glu Ala Met Leu Thr Val Thr 745 750 755 | 2432 |
| ata atc gat atg aac gac aac tgg ccg ata tgg gcc gac aac acg ctg Ile Ile Asp Met Asn Asp Asn Trp Pro Ile Trp Ala Asp Asn Thr Leu 760 765 770 | 2480 |
| cag cag aca ctg cgc gtg cgc gag atg gcc gac gaa gga gtc atc gtc Gln Gln Thr Leu Arg Val Arg Glu Met Ala Asp Glu Gly Val Ile Val 775 780 785 | 2528 |
| ggt aca ctg ctc gcc acc gac ttg gat ggc cct ctc tac aac cga gtc Gly Thr Leu Leu Ala Thr Asp Leu Asp Gly Pro Leu Tyr Asn Arg Val 790 795 800 805 | 2576 |
| cgc tac acc atg gtc ccc atc aag gac act cct gat gac cta ata gcg Arg Tyr Thr Met Val Pro Ile Lys Asp Thr Pro Asp Asp Leu Ile Ala 810 815 820 | 2624 |
| atc aac tac gtc acc ggt cag ctg act gtg aac aag ggg caa gca att Ile Asn Tyr Val Thr Gly Gln Leu Thr Val Asn Lys Gly Gln Ala Ile 825 830 835 | 2672 |
| gac gca gat gat cca cct cgc ttc tac ctg tat tac aag gtc act gcc Asp Ala Asp Asp Pro Pro Arg Phe Tyr Leu Tyr Tyr Lys Val Thr Ala 840 845 850 | 2720 |
| agc gat aag tgc tct ctt gac gag ttc ttc cct gtg tgc cca cct gac Ser Asp Lys Cys Ser Leu Asp Glu Phe Phe Pro Val Cys Pro Pro Asp 855 860 865 | 2768 |
| ccc act tac tgg aat acc gag gga gag ata gcg atc gcg ata acc gat Pro Thr Tyr Trp Asn Thr Glu Gly Glu Ile Ala Ile Ala Ile Thr Asp 870 875 880 885 | 2816 |
| acg aac aac aaa att cca cgc gcg gaa aca gat atg ttc cct agt gaa Thr Asn Asn Lys Ile Pro Arg Ala Glu Thr Asp Met Phe Pro Ser Glu 890 895 900 | 2864 |
| aag cgc atc tat gag aac aca ccc aat ggt acc aag atc acg acg atc Lys Arg Ile Tyr Glu Asn Thr Pro Asn Gly Thr Lys Ile Thr Thr Ile | 2912 |

| 905 | 910 | 915 | |
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| atc gct agt gac cag gac aga gat cga cca aat aac gcg ctg acg tac Ile Ala Ser Asp Gln Asp Arg Asp Arg Pro Asn Asn Ala Leu Thr Tyr 920 925 930 | | | 2960 |
| aga atc aac tac gca ttc aac cac agg ctg gag aac ttc ttc gca gtg Arg Ile Asn Tyr Ala Phe Asn His Arg Leu Glu Asn Phe Phe Ala Val 935 940 945 | | | 3008 |
| gac cct gat act ggt gaa ctg ttt gtc cac ttc acc act agc gaa gtg Asp Pro Asp Thr Gly Glu Leu Phe Val His Phe Thr Thr Ser Glu Val 950 955 960 965 | | | 3056 |
| ttg gac aga gac gga gag gaa ccg gag cat agg atc atc ttc acc atc Leu Asp Arg Asp Gly Glu Glu Pro Glu His Arg Ile Ile Phe Thr Ile 970 975 980 | | | 3104 |
| gtc gat aac ttg gaa ggc gct gga gat ggc aat cag aac aca atc tcc Val Asp Asn Leu Glu Gly Ala Gly Asp Gly Asn Gln Asn Thr Ile Ser 985 990 995 | | | 3152 |
| acg gag gtg cgt gtt ata ctg ctt gat ata aac gac aat aag ccg gaa Thr Glu Val Arg Val Ile Leu Leu Asp Ile Asn Asp Asn Lys Pro Glu 1000 1005 1010 | | | 3200 |
| cta cca att cct gat ggc gaa ttt tgg acc gtt tcc gaa ggt gaa gtg Leu Pro Ile Pro Asp Gly Glu Phe Trp Thr Val Ser Glu Gly Glu Val 1015 1020 1025 | | | 3248 |
| gag gga aaa cgc att cca cca gag att cac gca cac gac aga gat gaa Glu Gly Lys Arg Ile Pro Pro Glu Ile His Ala His Asp Arg Asp Glu 1030 1035 1040 1045 | | | 3296 |
| cca ttc aac gac aac tct cgc gtg gga tat gaa att cga tcg atc aaa Pro Phe Asn Asp Asn Ser Arg Val Gly Tyr Glu Ile Arg Ser Ile Lys 1050 1055 1060 | | | 3344 |
| ttg atc aat aga gac atc gag ctt cct caa gat cca ttc aaa ata ata Leu Ile Asn Arg Asp Ile Glu Leu Pro Gln Asp Pro Phe Lys Ile Ile 1065 1070 1075 | | | 3392 |
| acg att gat gat ctc gat acc tgg aaa ttc gtt gga gag ttg gag act Thr Ile Asp Asp Leu Asp Thr Trp Lys Phe Val Gly Glu Leu Glu Thr 1080 1085 1090 | | | 3440 |
| acc atg gac ctt aga gga tac tgg gga acc tat gat gtc gag ata cgt Thr Met Asp Leu Arg Gly Tyr Trp Gly Thr Tyr Asp Val Glu Ile Arg 1095 1100 1105 | | | 3488 |
| gcg ttt gac cac ggt ttc ccg atg ctg gat tca ttc gag acc tac caa Ala Phe Asp His Gly Phe Pro Met Leu Asp Ser Phe Glu Thr Tyr Gln 1110 1115 1120 1125 | | | 3536 |
| cta acc gtc agg cca tac aac ttc cat tca ccg gtg ttt gtg ttc cca Leu Thr Val Arg Pro Tyr Asn Phe His Ser Pro Val Phe Val Phe Pro 1130 1135 1140 | | | 3584 |
| act cct ggc tca acc atc agg ctt tct agg gag cgt gct ata gtc aat Thr Pro Gly Ser Thr Ile Arg Leu Ser Arg Glu Arg Ala Ile Val Asn 1145 1150 1155 | | | 3632 |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| ggt atg ctg gct ctg gct aat atc gcg agc gga gag ttc ctc gac aga Gly Met Leu Ala Leu Ala Asn Ile Ala Ser Gly Glu Phe Leu Asp Arg 1160 1165 1170 | 3680 |
| ctc tct gcc act gat gaa gat ggg cta cac gca ggc aga gta act ttc Leu Ser Ala Thr Asp Glu Asp Gly Leu His Ala Gly Arg Val Thr Phe 1175 1180 1185 | 3728 |
| tcc ata gct gga aac gat gaa gct gcg gaa tat ttc aat gtg ttg aac Ser Ile Ala Gly Asn Asp Glu Ala Ala Glu Tyr Phe Asn Val Leu Asn 1190 1195 1200 1205 | 3776 |
| gac ggt gac aac tca gca atg ctc acg ctg aag caa gca ttg ccc gct Asp Gly Asp Asn Ser Ala Met Leu Thr Leu Lys Gln Ala Leu Pro Ala 1210 1215 1220 | 3824 |
| ggc gtc cag cag ttt gag ttg gtt att cgg gcc acg gac ggc ggg acg Gly Val Gln Gln Phe Glu Leu Val Ile Arg Ala Thr Asp Gly Gly Thr 1225 1230 1235 | 3872 |
| gag ccg gga cct agg agt acc gac tgc tcc gtc act gtg gtg ttt gtg Glu Pro Gly Pro Arg Ser Thr Asp Cys Ser Val Thr Val Val Phe Val 1240 1245 1250 | 3920 |
| atg acg cag gga gac ccc gtg ttc gac gac aac gca gct tct gtc cgc Met Thr Gln Gly Asp Pro Val Phe Asp Asp Asn Ala Ala Ser Val Arg 1255 1260 1265 | 3968 |
| ttc gtt gaa aag gaa gct ggt atg tcg gaa aag ttt cag ctg cct cag Phe Val Glu Lys Glu Ala Gly Met Ser Glu Lys Phe Gln Leu Pro Gln 1270 1275 1280 1285 | 4016 |
| gcc gat gac ccc aaa aac tac agg tgt atg gac gac tgc cat acc atc Ala Asp Asp Pro Lys Asn Tyr Arg Cys Met Asp Asp Cys His Thr Ile 1290 1295 1300 | 4064 |
| tac tac tct atc gtt gat ggc aac gat ggt gac cac ttc gcc gtg gag Tyr Tyr Ser Ile Val Asp Gly Asn Asp Gly Asp His Phe Ala Val Glu 1305 1310 1315 | 4112 |
| ccg gag act aac gtg atc tat ttg ctg aag ccg ctg gac cgc agc caa Pro Glu Thr Asn Val Ile Tyr Leu Leu Lys Pro Leu Asp Arg Ser Gln 1320 1325 1330 | 4160 |
| cag gag cag tac agg gtc gtg gtg gcg gct tcc aac acg cct ggc ggc Gln Glu Gln Tyr Arg Val Val Val Ala Ala Ser Asn Thr Pro Gly Gly 1335 1340 1345 | 4208 |
| acc tcc acc ttg tcc tcc tca ctc ctc acc gtc acc atc ggc gtt cga Thr Ser Thr Leu Ser Ser Ser Leu Leu Thr Val Thr Ile Gly Val Arg 1350 1355 1360 1365 | 4256 |
| gaa gca aac cct aga ccg atc ttc gaa agt gaa ttt tac aca gct ggc Glu Ala Asn Pro Arg Pro Ile Phe Glu Ser Glu Phe Tyr Thr Ala Gly 1370 1375 1380 | 4304 |
| gtc tta cac acc gat agc ata cac aag gag ctc gtt tac ctg gcg gca Val Leu His Thr Asp Ser Ile His Lys Glu Leu Val Tyr Leu Ala Ala 1385 1390 1395 | 4352 |
| aaa cat tca gaa ggg ctt cct atc gtc tac tcg ata gat caa gaa acc Lys His Ser Glu Gly Leu Pro Ile Val Tyr Ser Ile Asp Gln Glu Thr | 4400 |

| 1400 | 1405 | 1410 | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|
| atg aaa ata gac gag tcg ttg caa aca gtt gtg gag gac gcc ttc gac Met Lys Ile Asp Glu Ser Leu Gln Thr Val Val Glu Asp Ala Phe Asp 1415 1420 1425 | | | 4448 |
| att aac tct gca acc gga gtc ata tcg ctg aac ttc cag cca aca tct Ile Asn Ser Ala Thr Gly Val Ile Ser Leu Asn Phe Gln Pro Thr Ser 1430 1435 1440 1445 | | | 4496 |
| gtc atg cac ggc agt ttc gac ttc gag gtg gtg gct agt gac acg cgt Val Met His Gly Ser Phe Asp Phe Glu Val Val Ala Ser Asp Thr Arg 1450 1455 1460 | | | 4544 |
| gga gcg agt gat cga gca aaa gtg tca att tac atg ata tcg act cgc Gly Ala Ser Asp Arg Ala Lys Val Ser Ile Tyr Met Ile Ser Thr Arg 1465 1470 1475 | | | 4592 |
| gtt aga gta gcc ttc ctg ttc tac aac acg gaa gct gaa gtt aac gag Val Arg Val Ala Phe Leu Phe Tyr Asn Thr Glu Ala Glu Val Asn Glu 1480 1485 1490 | | | 4640 |
| aga aga aat ttc att gca caa acg ttc gcc aac gcg ttt ggt atg aca Arg Arg Asn Phe Ile Ala Gln Thr Phe Ala Asn Ala Phe Gly Met Thr 1495 1500 1505 | | | 4688 |
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| cgc gag ggg tac aca gaa ctc cag gct cac ttc ata cga gac gac cag Arg Glu Gly Tyr Thr Glu Leu Gln Ala His Phe Ile Arg Asp Asp Gln 1530 1535 1540 | | | 4784 |
| ccg gtg cca gcc gac tat att gag gga tta ttt acg gaa ctc aat aca Pro Val Pro Ala Asp Tyr Ile Glu Gly Leu Phe Thr Glu Leu Asn Thr 1545 1550 1555 | | | 4832 |
| ttg cgt gac atc aga gag gta ctg agt act cag caa ttg acg cta ctg Leu Arg Asp Ile Arg Glu Val Leu Ser Thr Gln Gln Leu Thr Leu Leu 1560 1565 1570 | | | 4880 |
| gac ttt gcg gcg gga ggg tcg gca gtg ctg ccc ggc gga gag tac gcg Asp Phe Ala Ala Gly Gly Ser Ala Val Leu Pro Gly Gly Glu Tyr Ala 1575 1580 1585 | | | 4928 |
| cta gcg gtg tac atc ctc gcc ggc atc gca gcg tta ctc gcc gtc atc Leu Ala Val Tyr Ile Leu Ala Gly Ile Ala Ala Leu Leu Ala Val Ile 1590 1595 1600 1605 | | | 4976 |
| tgt ctc gct ctc ctc atc gct ttc ttc att agg aac cga aca ctg aac Cys Leu Ala Leu Leu Ile Ala Phe Phe Ile Arg Asn Arg Thr Leu Asn 1610 1615 1620 | | | 5024 |
| cgg cgc atc gaa gcc ctc aca atc aaa gat gtt cct acg gac atc gag Arg Arg Ile Glu Ala Leu Thr Ile Lys Asp Val Pro Thr Asp Ile Glu 1625 1630 1635 | | | 5072 |
| cca aac cac gcg tca gta gca gtg cta aac att aac aag cac aca gaa Pro Asn His Ala Ser Val Ala Val Leu Asn Ile Asn Lys His Thr Glu 1640 1645 1650 | | | 5120 |

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|----------------------------------------------------------------------|------|
| cct ggt tcc aat ccc ttc tat aac ccg gat gtt aag aca cct aac ttc | 5168 |
| Pro Gly Ser Asn Pro Phe Tyr Asn Pro Asp Val Lys Thr Pro Asn Phe | |
| 1655 1660 1665 | |
| gac act ata agc gaa gta tcc gat gac ctg ctt gat gtc gaa gac ttg | 5216 |
| Asp Thr Ile Ser Glu Val Ser Asp Asp Leu Leu Asp Val Glu Asp Leu | |
| 1670 1675 1680 1685 | |
| gaa cag ttt gga aag gat tac ttc cca ccc gaa aac gaa att gag agc | 5264 |
| Glu Gln Phe Gly Lys Asp Tyr Phe Pro Pro Glu Asn Glu Ile Glu Ser | |
| 1690 1695 1700 | |
| ctg aat ttt gca cgt aac ccc ata gcg aca cac ggg aac aac ttt ggc | 5312 |
| Leu Asn Phe Ala Arg Asn Pro Ile Ala Thr His Gly Asn Asn Phe Gly | |
| 1705 1710 1715 | |
| gta aac tca agc ccc tcc aac cca gag ttc tcc aac tcc cag ttt aga | 5360 |
| Val Asn Ser Ser Pro Ser Asn Pro Glu Phe Ser Asn Ser Gln Phe Arg | |
| 1720 1725 1730 | |
| agt taaactaaat acacttttat cacttgcata gacttatgta tttaataatt | 5413 |
| Ser | |
| ttacatTTTTT tacattaaat ataaatgttt tatatgtaat aatagtgtga taaaatgtac | 5473 |
| gtaacaatca acatagctgt tgtaggttcg taaataacat actcgtaatg tataagtgtt | 5533 |
| atgttttatat atagaaataa aaatattaaa tattaataaaaa aaaaaaaaaa aaaaaaaaaa | 5592 |

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| Thr Ala Thr Ala Gln Arg Asp Arg Cys Gly Tyr Met Val Glu Ile Pro |
| 20 25 30 |
| Arg Pro Asp Arg Pro Asp Phe Pro Pro Gln Asn Phe Asp Gly Leu Thr |
| 35 40 45 |
| Trp Ala Gln Gln Pro Leu Leu Pro Ala Glu Asp Arg Glu Glu Val Cys |
| 50 55 60 |
| Leu Asn Asp Tyr Glu Pro Asp Pro Trp Ser Asn Asn His Gly Asp Gln |
| 65 70 75 80 |
| Arg Ile Tyr Met Glu Glu Glu Ile Glu Gly Pro Val Val Ile Ala Lys |
| 85 90 95 |
| Ile Asn Tyr Gln Gly Asn Thr Pro Pro Gln Ile Arg Leu Pro Phe Arg |
| 100 105 110 |
| Val Gly Ala Ala His Met Leu Gly Ala Glu Ile Arg Glu Tyr Pro Asp |
| 115 120 125 |
| Ala Thr Gly Asp Trp Tyr Leu Val Ile Thr Gln Arg Gln Asp Tyr Glu |
| 130 135 140 |
| Thr Pro Asp Met Gln Arg Tyr Thr Phe Asp Val Ser Val Glu Gly Gln |
| 145 150 155 160 |
| Ser Leu Val Val Thr Val Arg Leu Asp Ile Val Asn Ile Asp Asp Asn |
| 165 170 175 |
| Ala Pro Ile Ile Glu Met Leu Glu Pro Cys Asn Leu Pro Glu Leu Val |
| 180 185 190 |
| Glu Pro His Val Thr Glu Cys Lys Tyr Ile Val Ser Asp Ala Asp Gly |
| 195 200 205 |
| Leu Ile Ser Thr Ser Val Met Ser Tyr His Ile Asp Ser Glu Arg Gly |
| 210 215 220 |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Glu | Lys | Val | Phe | Glu | Leu | Ile | Arg | Lys | Asp | Tyr | Pro | Gly | Asp | Trp |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Thr | Lys | Val | Tyr | Met | Val | Leu | Glu | Leu | Lys | Lys | Ser | Leu | Asp | Tyr | Glu |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Glu | Asn | Pro | Leu | His | Ile | Phe | Arg | Val | Thr | Ala | Ser | Asp | Ser | Leu | Pro |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Asn | Asn | Arg | Thr | Val | Val | Met | Met | Val | Glu | Val | Glu | Asn | Val | Glu | His |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Arg | Asn | Pro | Arg | Trp | Met | Glu | Ile | Phe | Ala | Val | Gln | Gln | Phe | Asp | Glu |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Lys | Gln | Ala | Lys | Ser | Phe | Thr | Val | Arg | Ala | Ile | Asp | Gly | Asp | Thr | Gly |
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| Ile | Asn | Lys | Pro | Ile | Phe | Tyr | Arg | Ile | Glu | Thr | Glu | Asp | Glu | Asp | Lys |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Glu | Phe | Phe | Ser | Ile | Glu | Asn | Ile | Gly | Glu | Gly | Arg | Asp | Gly | Ala | Arg |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Phe | His | Val | Ala | Pro | Ile | Asp | Arg | Asp | Tyr | Leu | Lys | Arg | Asp | Met | Phe |
| | 355 | | | | | | 360 | | | | | 365 | | | |
| His | Ile | Arg | Ile | Ile | Ala | Tyr | Lys | Gln | Gly | Asp | Asn | Asp | Lys | Glu | Gly |
| | 370 | | | | | 375 | | | | 380 | | | | | |
| Glu | Ser | Ser | Phe | Glu | Thr | Ser | Ala | Asn | Val | Thr | Ile | Ile | Ile | Asn | Asp |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Ile | Asn | Asp | Gln | Arg | Pro | Glu | Pro | Phe | His | Lys | Glu | Tyr | Thr | Ile | Ser |
| | | | 405 | | | | | 410 | | | | | | 415 | |
| Ile | Met | Glu | Glu | Thr | Ala | Met | Thr | Leu | Asp | Leu | Gln | Glu | Phe | Gly | Phe |
| | | 420 | | | | | | 425 | | | | | 430 | | |
| His | Asp | Arg | Asp | Ile | Gly | Pro | His | Ala | Gln | Tyr | Asp | Val | His | Leu | Glu |
| | 435 | | | | | 440 | | | | | 445 | | | | |
| Ser | Ile | Gln | Pro | Glu | Gly | Ala | His | Thr | Ala | Phe | Tyr | Ile | Ala | Pro | Glu |
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| Glu | Gly | Tyr | Gln | Ala | Gln | Ser | Phe | Thr | Ile | Gly | Thr | Arg | Ile | His | Asn |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Met | Leu | Asp | Tyr | Glu | Asp | Asp | Asp | Tyr | Arg | Pro | Gly | Ile | Lys | Leu | Lys |
| | | | 485 | | | | | 490 | | | | | 495 | | |
| Ala | Val | Ala | Ile | Asp | Arg | His | Asp | Asn | Asn | His | Ile | Gly | Glu | Ala | Ile |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Ile | Asn | Ile | Asn | Leu | Ile | Asn | Trp | Asn | Asp | Glu | Leu | Pro | Ile | Phe | Asp |
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| Glu | Asp | Ala | Tyr | Asn | Val | Thr | Phe | Glu | Glu | Thr | Val | Gly | Asp | Gly | Phe |
| | 530 | | | | | 535 | | | | 540 | | | | | |
| His | Ile | Gly | Lys | Tyr | Arg | Ala | Lys | Asp | Arg | Asp | Ile | Gly | Asp | Ile | Val |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Glu | His | Ser | Ile | Leu | Gly | Asn | Ala | Ala | Asn | Phe | Leu | Arg | Ile | Asp | Ile |
| | | | 565 | | | | | 570 | | | | | | 575 | |
| Asp | Thr | Gly | Asp | Val | Tyr | Val | Ser | Arg | Asp | Asp | Tyr | Phe | Asp | Tyr | Gln |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Arg | Gln | Asn | Glu | Ile | Ile | Val | Gln | Ile | Leu | Ala | Val | Asp | Thr | Leu | Gly |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Leu | Pro | Gln | Asn | Arg | Ala | Thr | Thr | Gln | Leu | Thr | Ile | Phe | Leu | Glu | Asp |
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| Ile | Asn | Asn | Thr | Pro | Pro | Ile | Leu | Arg | Leu | Pro | Arg | Ser | Ser | Pro | Ser |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Val | Glu | Glu | Asn | Val | Glu | Val | Gly | His | Pro | Ile | Thr | Glu | Gly | Leu | Thr |
| | | | 645 | | | | | | 650 | | | | | 655 | |
| Ala | Thr | Asp | Pro | Asp | Thr | Thr | Ala | Asp | Leu | His | Phe | Glu | Ile | Asp | Trp |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Asp | Asn | Ser | Tyr | Ala | Thr | Lys | Gln | Gly | Thr | Asn | Gly | Pro | Asn | Thr | Ala |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Asp | Tyr | His | Gly | Cys | Val | Glu | Ile | Leu | Thr | Val | Tyr | Pro | Asp | Pro | Asp |
| | 690 | | | | | 695 | | | | 700 | | | | | |
| Asn | His | Gly | Arg | Ala | Glu | Gly | His | Leu | Val | Ala | Arg | Glu | Val | Ser | Asp |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| Gly | Val | Thr | Ile | Asp | Tyr | Glu | Lys | Phe | Glu | Val | Leu | Tyr | Leu | Val | Val | 725 | 730 | 735 |
| Arg | Val | Ile | Asp | Arg | Asn | Thr | Val | Ile | Gly | Pro | Asp | Tyr | Asp | Glu | Ala | 740 | 745 | 750 |
| Met | Leu | Thr | Val | Thr | Ile | Ile | Asp | Met | Asn | Asp | Asn | Trp | Pro | Ile | Trp | 755 | 760 | 765 |
| Ala | Asp | Asn | Thr | Leu | Gln | Gln | Thr | Leu | Arg | Val | Arg | Glu | Met | Ala | Asp | 770 | 775 | 780 |
| Glu | Gly | Val | Ile | Val | Gly | Thr | Leu | Leu | Ala | Thr | Asp | Leu | Asp | Gly | Pro | 785 | 790 | 795 |
| Leu | Tyr | Asn | Arg | Val | Arg | Tyr | Thr | Met | Val | Pro | Ile | Lys | Asp | Thr | Pro | 805 | 810 | 815 |
| Asp | Asp | Leu | Ile | Ala | Ile | Asn | Tyr | Val | Thr | Gly | Gln | Leu | Thr | Val | Asn | 820 | 825 | 830 |
| Lys | Gly | Gln | Ala | Ile | Asp | Ala | Asp | Asp | Pro | Pro | Arg | Phe | Tyr | Leu | Tyr | 835 | 840 | 845 |
| Tyr | Lys | Val | Thr | Ala | Ser | Asp | Lys | Cys | Ser | Leu | Asp | Glu | Phe | Phe | Pro | 850 | 855 | 860 |
| Val | Cys | Pro | Pro | Asp | Pro | Thr | Tyr | Trp | Asn | Thr | Glu | Gly | Glu | Ile | Ala | 865 | 870 | 875 |
| Ile | Ala | Ile | Thr | Asp | Thr | Asn | Asn | Lys | Ile | Pro | Arg | Ala | Glu | Thr | Asp | 885 | 890 | 895 |
| Met | Phe | Pro | Ser | Glu | Lys | Arg | Ile | Tyr | Glu | Asn | Thr | Pro | Asn | Gly | Thr | 900 | 905 | 910 |
| Lys | Ile | Thr | Thr | Ile | Ile | Ala | Ser | Asp | Gln | Asp | Arg | Asp | Arg | Pro | Asn | 915 | 920 | 925 |
| Asn | Ala | Leu | Thr | Tyr | Arg | Ile | Asn | Tyr | Ala | Phe | Asn | His | Arg | Leu | Glu | 930 | 935 | 940 |
| Asn | Phe | Phe | Ala | Val | Asp | Pro | Asp | Thr | Gly | Glu | Leu | Phe | Val | His | Phe | 945 | 950 | 955 |
| Thr | Thr | Ser | Glu | Val | Leu | Asp | Arg | Asp | Gly | Glu | Glu | Pro | Glu | His | Arg | 965 | 970 | 975 |
| Ile | Ile | Phe | Thr | Ile | Val | Asp | Asn | Leu | Glu | Gly | Ala | Gly | Asp | Gly | Asn | 980 | 985 | 990 |
| Gln | Asn | Thr | Ile | Ser | Thr | Glu | Val | Arg | Val | Ile | Leu | Leu | Asp | Ile | Asn | 995 | 1000 | 1005 |
| Asp | Asn | Lys | Pro | Glu | Leu | Pro | Ile | Pro | Asp | Gly | Glu | Phe | Trp | Thr | Val | 1010 | 1015 | 1020 |
| Ser | Glu | Gly | Glu | Val | Glu | Gly | Lys | Arg | Ile | Pro | Pro | Glu | Ile | His | Ala | 1025 | 1030 | 1035 |
| His | Asp | Arg | Asp | Glu | Pro | Phe | Asn | Asp | Asn | Ser | Arg | Val | Gly | Tyr | Glu | 1045 | 1050 | 1055 |
| Ile | Arg | Ser | Ile | Lys | Leu | Ile | Asn | Arg | Asp | Ile | Glu | Leu | Pro | Gln | Asp | 1060 | 1065 | 1070 |
| Pro | Phe | Lys | Ile | Ile | Thr | Ile | Asp | Asp | Leu | Asp | Thr | Trp | Lys | Phe | Val | 1075 | 1080 | 1085 |
| Gly | Glu | Leu | Glu | Thr | Thr | Met | Asp | Leu | Arg | Gly | Tyr | Trp | Gly | Thr | Tyr | 1090 | 1095 | 1100 |
| Asp | Val | Glu | Ile | Arg | Ala | Phe | Asp | His | Gly | Phe | Pro | Met | Leu | Asp | Ser | 1105 | 1110 | 1115 |
| Phe | Glu | Thr | Tyr | Gln | Leu | Thr | Val | Arg | Pro | Tyr | Asn | Phe | His | Ser | Pro | 1125 | 1130 | 1135 |
| Val | Phe | Val | Phe | Pro | Thr | Pro | Gly | Ser | Thr | Ile | Arg | Leu | Ser | Arg | Glu | 1140 | 1145 | 1150 |
| Arg | Ala | Ile | Val | Asn | Gly | Met | Leu | Ala | Leu | Ala | Asn | Ile | Ala | Ser | Gly | 1155 | 1160 | 1165 |
| Glu | Phe | Leu | Asp | Arg | Leu | Ser | Ala | Thr | Asp | Glu | Asp | Gly | Leu | His | Ala | 1170 | 1175 | 1180 |
| Gly | Arg | Val | Thr | Phe | Ser | Ile | Ala | Gly | Asn | Asp | Glu | Ala | Ala | Glu | Tyr | 1185 | 1190 | 1195 |
| Phe | Asn | Val | Leu | Asn | Asp | Gly | Asp | Asn | Ser | Ala | Met | Leu | Thr | Leu | Lys | 1205 | 1210 | 1215 |

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| Gln Ala Leu Pro Ala Gly Val Gln Gln Phe Glu Leu Val Ile Arg Ala | 1220 | 1225 | 1230 |
| Thr Asp Gly Gly Thr Glu Pro Gly Pro Arg Ser Thr Asp Cys Ser Val | 1235 | 1240 | 1245 |
| Thr Val Val Phe Val Met Thr Gln Gly Asp Pro Val Phe Asp Asp Asn | 1250 | 1255 | 1260 |
| Ala Ala Ser Val Arg Phe Val Glu Lys Glu Ala Gly Met Ser Glu Lys | 1265 | 1270 | 1275 |
| Phe Gln Leu Pro Gln Ala Asp Asp Pro Lys Asn Tyr Arg Cys Met Asp | 1285 | 1290 | 1295 |
| Asp Cys His Thr Ile Tyr Tyr Ser Ile Val Asp Gly Asn Asp Gly Asp | 1300 | 1305 | 1310 |
| His Phe Ala Val Glu Pro Glu Thr Asn Val Ile Tyr Leu Leu Lys Pro | 1315 | 1320 | 1325 |
| Leu Asp Arg Ser Gln Gln Glu Gln Tyr Arg Val Val Val Ala Ala Ser | 1330 | 1335 | 1340 |
| Asn Thr Pro Gly Gly Thr Ser Thr Leu Ser Ser Ser Leu Leu Thr Val | 1345 | 1350 | 1355 |
| Thr Ile Gly Val Arg Glu Ala Asn Pro Arg Pro Ile Phe Glu Ser Glu | 1365 | 1370 | 1375 |
| Phe Tyr Thr Ala Gly Val Leu His Thr Asp Ser Ile His Lys Glu Leu | 1380 | 1385 | 1390 |
| Val Tyr Leu Ala Ala Lys His Ser Glu Gly Leu Pro Ile Val Tyr Ser | 1395 | 1400 | 1405 |
| Ile Asp Gln Glu Thr Met Lys Ile Asp Glu Ser Leu Gln Thr Val Val | 1410 | 1415 | 1420 |
| Glu Asp Ala Phe Asp Ile Asn Ser Ala Thr Gly Val Ile Ser Leu Asn | 1425 | 1430 | 1435 |
| Phe Gln Pro Thr Ser Val Met His Gly Ser Phe Asp Phe Glu Val Val | 1445 | 1450 | 1455 |
| Ala Ser Asp Thr Arg Gly Ala Ser Asp Arg Ala Lys Val Ser Ile Tyr | 1460 | 1465 | 1470 |
| Met Ile Ser Thr Arg Val Arg Val Ala Phe Leu Phe Tyr Asn Thr Glu | 1475 | 1480 | 1485 |
| Ala Glu Val Asn Glu Arg Arg Asn Phe Ile Ala Gln Thr Phe Ala Asn | 1490 | 1495 | 1500 |
| Ala Phe Gly Met Thr Cys Asn Ile Asp Ser Val Leu Pro Ala Thr Asp | 1505 | 1510 | 1515 |
| Ala Asn Gly Val Ile Arg Glu Gly Tyr Thr Glu Leu Gln Ala His Phe | 1525 | 1530 | 1535 |
| Ile Arg Asp Asp Gln Pro Val Pro Ala Asp Tyr Ile Glu Gly Leu Phe | 1540 | 1545 | 1550 |
| Thr Glu Leu Asn Thr Leu Arg Asp Ile Arg Glu Val Leu Ser Thr Gln | 1555 | 1560 | 1565 |
| Gln Leu Thr Leu Leu Asp Phe Ala Ala Gly Gly Ser Ala Val Leu Pro | 1570 | 1575 | 1580 |
| Gly Gly Glu Tyr Ala Leu Ala Val Tyr Ile Leu Ala Gly Ile Ala Ala | 1585 | 1590 | 1595 |
| Leu Leu Ala Val Ile Cys Leu Ala Leu Leu Ile Ala Phe Phe Ile Arg | 1605 | 1610 | 1615 |
| Asn Arg Thr Leu Asn Arg Arg Ile Glu Ala Leu Thr Ile Lys Asp Val | 1620 | 1625 | 1630 |
| Pro Thr Asp Ile Glu Pro Asn His Ala Ser Val Ala Val Leu Asn Ile | 1635 | 1640 | 1645 |
| Asn Lys His Thr Glu Pro Gly Ser Asn Pro Phe Tyr Asn Pro Asp Val | 1650 | 1655 | 1660 |
| Lys Thr Pro Asn Phe Asp Thr Ile Ser Glu Val Ser Asp Asp Leu Leu | 1665 | 1670 | 1675 |
| Asp Val Glu Asp Leu Glu Gln Phe Gly Lys Asp Tyr Phe Pro Pro Glu | 1685 | 1690 | 1695 |
| Asn Glu Ile Glu Ser Leu Asn Phe Ala Arg Asn Pro Ile Ala Thr His | 1700 | 1705 | 1710 |

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